

# MINING

## CONGRESS JOURNAL

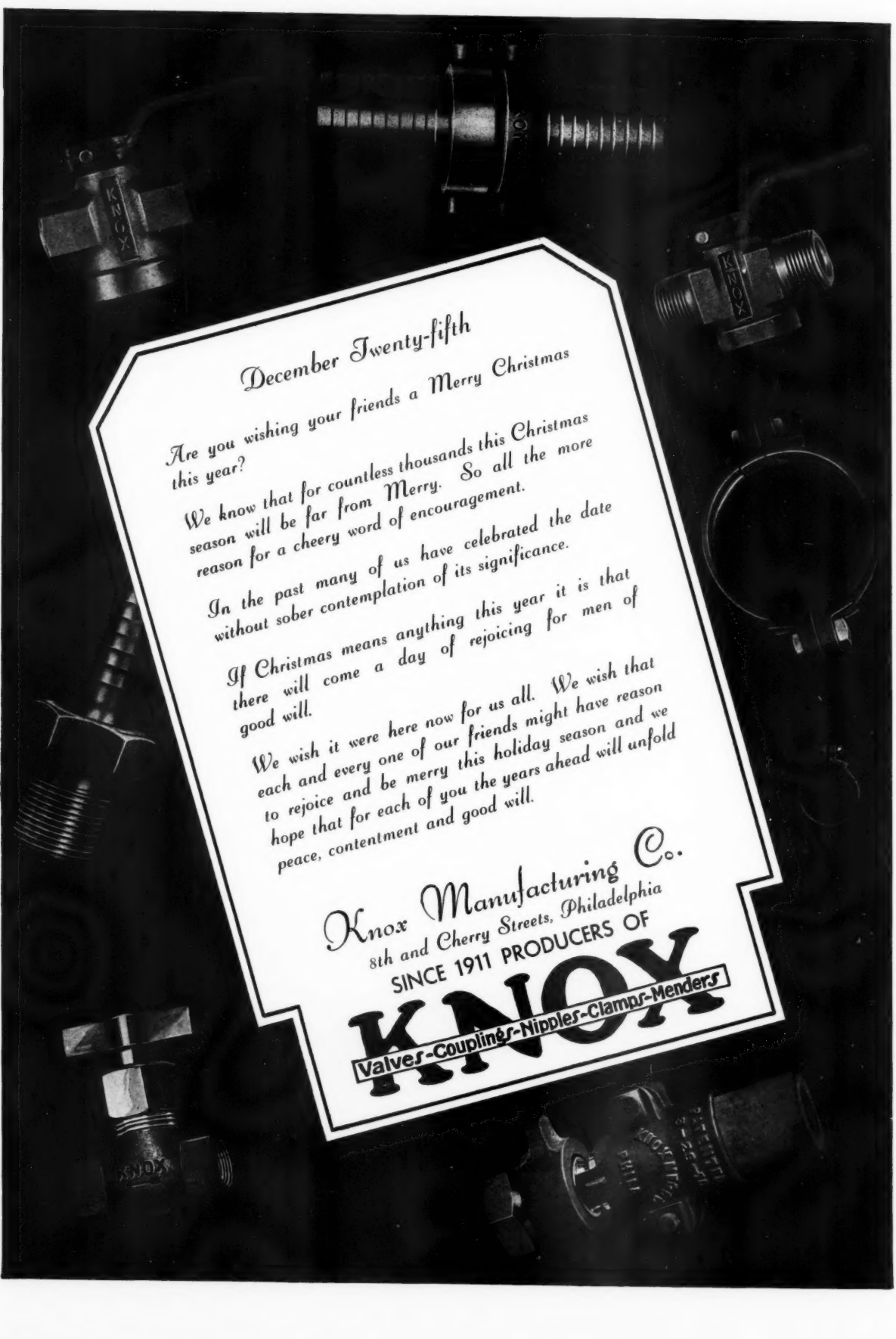


★  
**ONE  
OF THE  
BLESSINGS  
OF YULETIDE THIS  
YEAR IS THE OPPORTUNITY  
TO LOOK FORWARD TO ULTIMATE  
PEACE ON EARTH AND GOOD WILL  
TOWARD MEN AS WE WISH OUR  
MANY FRIENDS THE SEASON'S GREETINGS**

**AND A  
HAPPY**

**1 9 4 3**





December Twenty-fifth

Are you wishing your friends a Merry Christmas this year?

We know that for countless thousands this Christmas season will be far from Merry. So all the more reason for a cheery word of encouragement.

In the past many of us have celebrated the date without sober contemplation of its significance.

If Christmas means anything this year it is that there will come a day of rejoicing for men of good will.

We wish it were here now for us all. We wish that each and every one of our friends might have reason to rejoice and be merry this holiday season and we hope that for each of you the years ahead will unfold peace, contentment and good will.

Knox Manufacturing Co.  
8th and Cherry Streets, Philadelphia  
SINCE 1911 PRODUCERS OF

**KNOX**  
Valves-Couplers-Nipples-Clamps-Menders

# MINING

## CONGRESS JOURNAL

VOLUME 28, NUMBER 12

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FOR DECEMBER 1942

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Absenteeism this year will cost war industry 121,000,000 man-days, the equivalent of a billion dollars in wages to war workers and enough time to build 5,000 flying fortresses at the present rate of production, according to Dr. Victor G. Heiser, medical consultant to the National Association of Manufacturers' committee on healthful working conditions.

Keep well and stay on the job in 1943!



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## THE AMERICAN MINING CONGRESS

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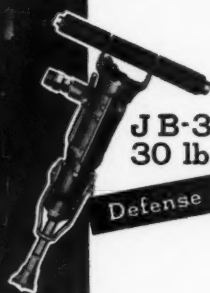


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30 lbs.

Defense Plants



**J A-35**  
35 lbs.

Coal Mining



**J B-4**  
45 lbs.

Open Pit Mining



**J B-5**  
55 lbs.

Strategic Roads



**X-59**  
72 lbs.

Dam Sites

Each of these Jackhamers will do a variety of jobs, but each of them will do some one specific class of work better than any other size or type of drill. This enables users of Ingersoll-Rand Jackhamers to select the proper machine for their particular drilling problem—and drill more holes per shift.

## KEEP 'EM DRILLING

Ask your supplier for an oil that meets I-R Specification 433—the new rock drill lubricant developed by Ingersoll-Rand



*Right*—A cross section of the Easy-Holding J B-5 Jackhammer, the outstanding drill for heavy construction, quarrying, and mining. Drill runners using this machine put down more feet of hole per shift because of its Easy Holding—the operator's energy is used to cut rock and not to fight fatiguing, power-wasting, destructive recoil.

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# SAVED

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Helping you get out more coal and helping to conserve the nation's rubber supply is our job. For example, a coal mine told us they needed a 9-ply 42-oz. duck conveyor belt for a big new installation. Our engineers produced a 7-ply belt of one-third greater strength per ply. They did this by utilizing a 48-ounce duck developed by United States Rubber Company. This belt saved nearly 1,000 pounds of rubber and nearly 2,000 square yards of duck—both vital war materials!

**THIS 7-PLY BELT IS STRONGER, HAS EQUAL WEARING QUALITIES AND COSTS LESS.**

We're not attempting to sell you a 48-oz. duck belt because

you may not need one, but what we would like to suggest is that you call in one of our engineers whenever you have a problem relating to belts or other essential mechanical rubber goods.

Our experience should be especially valuable to you today. Rubber must be conserved. Restrictions are mounting. Therefore, you want to be sure you're not "missing a bet"—so far as rubber knowledge is concerned.

We've "lived" with rubber compounding and belt construction for a good many years and if you do need a new conveyor belt, we will build you a *good* one, making most efficient use of precious rubber and a lot of experience.



1230 SIXTH AVENUE • ROCKEFELLER CENTER • NEW YORK

## UNITED STATES RUBBER COMPANY



## How Did Harlan Fuel Replace 700 Cars With Only 400 Modern S-D "Automatics?"

*Here is a typical case history of what is happening in numerous mines to get maximum production at the very lowest cost.*

Harlan Fuel Co., Yancey, Ky., recently retired 700 old obsolete type cars and replaced them with only 400 new, modern S-D "Automatics." Why? Investigation convinced Harlan Fuel that it was a wise and assured, cold dollars and cents saving proposition.

These 400 new S-D "Automatics" were ample because this remarkable car embodies features that heretofore have not been available in any mine car. Extra large capacities for any given over-all dimensions are possible because of new sloping side design and added width of door openings. Improved door mechanisms have resulted in the simplest, most fool-proof action we know of. Lower center of gravity has resulted in improved trackability . . . safer and uninterrupted performance. Some of these cars are shown, in operation, above.

These, and other features have contributed in reducing the number of cars in service . . . in reducing turnover of cars and labor costs, and the consequent result is a new

low cost of transportation of coal from mine to tipple. Isn't it clear that the savings must be worthwhile in handling only 400 cars compared to 700, particularly when a greater tonnage is being produced than before?

To keep up with today's demands with uninterrupted service; to offset rising costs of operation, more and more progressive operators are changing over to S-D "Automatics." Isn't it obvious that these remarkable cars should be just as profitable to you as they are to other operators? Can you imagine any smart operator making a complete change-over to S-D "Automatics" for any reason other than to save money? Of course not! And neither can we. That is exactly why so many are doing it.

Mr. J. Frank Sharp, Supt. of Harlan Fuel Co., says: "I've used all of them—every type of car—and I know from experience that only Sanford-Day 'Automatics' can give you maximum production at the least possible cost per ton."

**Sanford-Day Iron Works,** KNOXVILLE, TENNESSEE



*The Axis started this war of machines... but Uncle Sam's Army is coming up fast with the weapons to finish it! One of the newest and most effective is this giant Mack Army Prime Mover.*

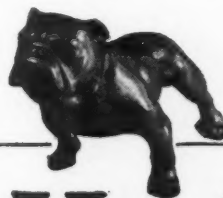
## ***Made-to-Order***

### ***for the World's Toughest Customer...***

The Army's newest and biggest prime mover is probably the best single job in truck history. Most of its details can't be made public... but you can see for yourself that it's *big*. And we can tell you that it hooks up to a whale of a big gun, takes on a terrific load and goes almost anywhere except straight up. We're proud of it, at Mack, and with good reason. Proud that the Army called on Mack men and facilities to develop and build it. Proud, as Americans, that our fighting men are getting fighting equipment so fine. And proud that this, too, is "built like a Mack truck"... with all that phrase has stood for in ruggedness and reliability for forty-two years!



*Mack Trucks, Inc., New York, N. Y. Factory branches and dealers in all principal cities for service and parts.*



# ***Mack***

**TRUCKS  
FOR EVERY PURPOSE  
ONE TON TO FORTY-FIVE TONS**

**BUY U. S. WAR BONDS**

**IF YOU'VE GOT A MACK, YOU'RE LUCKY... IF YOU PLAN TO GET ONE, YOU'RE WISE!**



# **YOU CAN PRODUCE MORE COAL AT LESS COST**

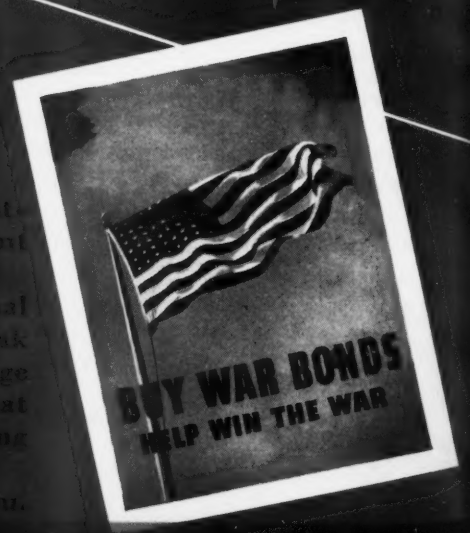
## **WITH JOY EQUIPMENT**



In Peace time the economic base runs of cost-per-ton and tonnage output is of paramount importance.

With the Nation at war—with our national future at stake, and coal, the vital weapon, in peak demand—the question of low-cost, top-tonnage output demands urgent attention. Mines that are Joy-equipped are modern mines—meeting today's needs with today's tools.

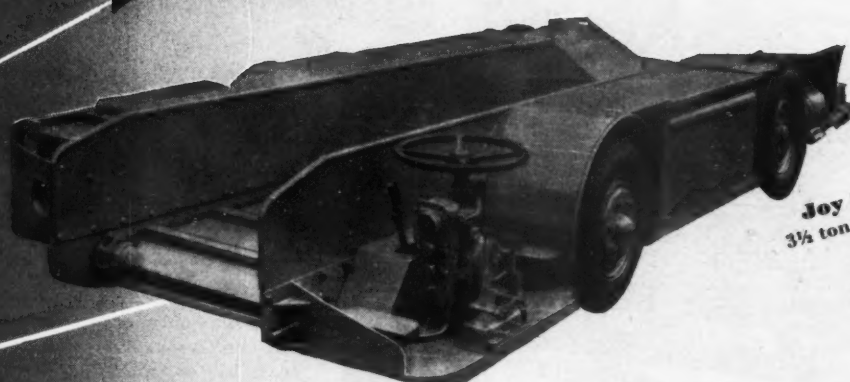
Joy Engineers will be pleased to confer with you.



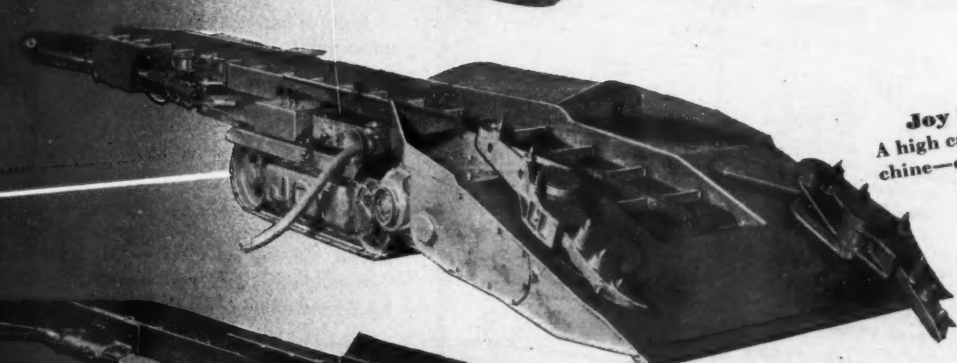




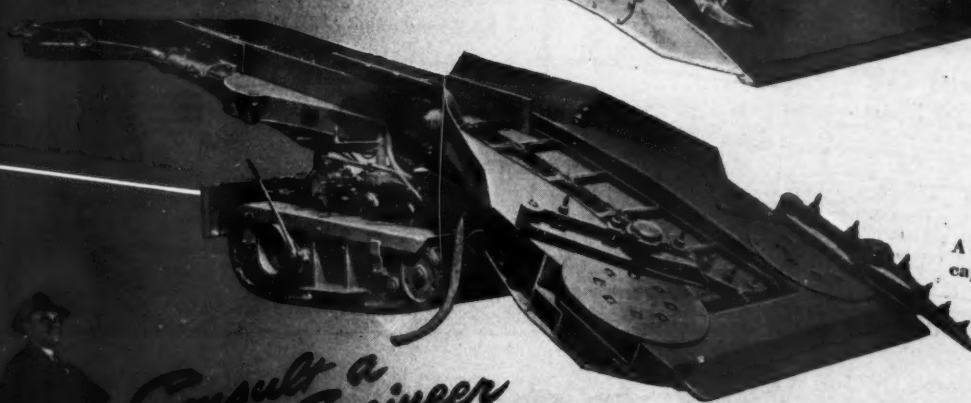
**Joy 42" Shuttle Car**  
6 ton capacity for high seams.



**Joy 32" Shuttle Car**  
3½ ton capacity for low seam operations.



**Joy 14-Bu Loader**  
A high capacity low vein machine—only 26" high—5 tons per minute.



**Joy 11-Bu Loader**  
A heavy duty machine of high capacity, 8-10 tons per minute.

*Consult a  
Joy Engineer*



**JOY**

**MANUFACTURING CO., FRANKLIN, PA.**

# A whole year's tips on a handy tag... TO GO WHERE IT'S NEEDED MOST



## HOW TO MAKE WIRE ROPE LAST

### INSTALL PROPERLY

Avoid kinks by proper unreeling and uncoiling:



Mount reel on jacks or substantial cribbing.



Roll coil along floor.

### SPOOL CORRECTLY THE FIRST TIME:

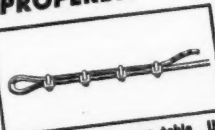
Wind all wraps on tight. Make each turn fit snug. Do not interlock strands.



### PUT CLIPS ON PROPERLY:

#### NUMBER OF CLIPS REQUIRED FOR "BLUE CENTER" STEEL WIRE ROPES

Rope Diameter	Number of Clips	Spacing of Clips	Length of Wrench
1/2" to 3/4"	4	3 1/2" to 4 1/2"	12"
3/4" to 1"	5	5" to 6 1/2"	18"
1" to 1 1/4"	6	6 1/2" to 7 1/2"	24"
1 1/4" to 1 3/4"	7	8" to 9 1/2"	24"
1 3/4" to 2"	8	9 1/2"	24"



Use enough clips—see table. Use a wire-rope thimble. Put U-Bolts on dead end of rope. Retighten clips after running one hour.

ALL THROUGH 1942, our advertising has brought you much valuable information on how to install wire rope, how to maintain and inspect it, how, in brief, to make it last as long as possible.

Many of you executives and operating men have expressed a desire to pass along this information in simple, handy form to your men who really handle the rope, so they'll be able to use it right on the job.

Here they are—a whole year's tips on wire-rope conservation—on a sturdy, convenient tag you can have fastened right to equipment, on controls, or to the wire rope itself.

Printed on heavy stock and varnished for further protection, the tags are ideal for use right on the job—durable, washable, always legible. And they're yours for the asking! WRITE FOR "TAG A".



JOHN A. ROEBLING'S SONS COMPANY

TRENTON, NEW JERSEY

Branches and Warehouses in Principal Cities

★ PROMPT SERVICE  
★ on essential orders  
★ from warehouse  
★ stocks or mill



# ROEBLING

## "Blue Center"

STEEL WIRE ROPE  
PREFORMED OR NON-PREFORMED



*Maintenance  
starts with  
the Shot*

★ ★ ★ ★ ★ ★ ★ ★  
**AMERICAN**  
CYANAMID & CHEMICAL CORPORATION  
★ ★ ★ ★ ★ ★ ★ ★

**EXPLOSIVES**

**Correct Coal Sizing will  
minimize maintenance**  
*right down the line*

**B**REAKING coal down into the right sizes — avoiding fines as well as big lumps — is the result of correct blasting practice. It means minimizing wear and tear on loaders, conveyors, cars, hoists, dumpers and tipples. It helps every piece of equipment work at its best, with the least maintenance cost.

AMERICAN Explosives and Blasting Supplies are made under exacting specifications in well equipped plants. Chemical control and thorough inspection insure adherence in manufacture to the methods and processes developed by our research.

Today, as never before, efficient blasting is all-important. Capable technical service men are available to assist you with your blasting problems.

- **HIGH EXPLOSIVES**
- **PERMISSIBLES**
- **BLASTING POWDER**
- **BLASTING ACCESSORIES**

**American Cyanamid & Chemical Corporation**



*A Unit of American Cyanamid Company*

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Pottsville, Pa. Hazleton, Pa. Maynard, Mass.

# WAR BOND PAYROLL SAVINGS ROLL OF HONOR

From With One Hundred or More Employees Whose Workers Are Investing at Least 10 Percent of the Gross Payroll in War Savings Bonds Through the Payroll Savings Plan

*The eyes of all America are upon the United States Treasury Roll of Honor appearing in the "Payroll Savings News." For copy write War Savings Staff, Treasury Department, Washington, D. C.*

## NEW 10% WAR BOND DRIVES SWELL TREASURY HONOR ROLL

### HOW TO "TOP THAT 10% BY NEW YEAR'S"

Out of the 13 labor-management conferences sponsored by the National Committee for Payroll Savings and conducted by the Treasury Department throughout the Nation has come this formula for reaching the 10% of gross payroll War Bond objective:

1. **Decide to get 10%.**  
It has been the Treasury experience wherever management and labor have gotten together and decided the job could be done, the job was done.
2. **Get a committee of labor and management to work out details for solicitation.**
  - a. They, in turn, will appoint captain-leaders or chairmen who will be responsible for actual solicitation of no more than 10 workers.
  - b. A card should be prepared for each and every worker with his name on it.
  - c. An estimate should be made of the possible amount each worker can set aside so that an "over-all" of 10% is achieved. Some may not be able to set aside 10%, others can save more.
3. **Set aside a date to start the drive.**
4. **There should be little or no time between the announcement of the drive and the drive itself.**  
The drive should last not over 1 week.
5. The opening of the drive may be through a talk, a rally, or just a plain announcement in each department.
6. Schedule competition between departments; show progress charts daily.
7. Set as a goal the Treasury flag with a "T."

AS of today, more than 20,000 firms of all sizes have reached the "Honor Roll" goal of at least 10% of the gross payroll in War Bonds. This is a glorious testimony to the voluntary American way of facing emergencies.

But there is still more to be done. By January 1st, 1943, the Treasury hopes to raise participation from the present total of around 20,000,000 employees investing an average of 8% of earnings to over 30,000,000 investing an average of at least 10% of earnings in War Bonds.

You are urged to set your own sights accordingly and to do all in your power to start the new year on the Roll of Honor, to give War Bonds for bonuses, and to purchase up to the limit, both personally and as a company, of Series F and G Bonds. (Remember that the new limitation of purchases of F and G Bonds in any one calendar year has been increased from \$50,000 to \$100,000.)

**TIME IS SHORT.** Our country is counting on you to—

## "TOP THAT 10% BY NEW YEAR'S"



# Save with War Savings Bonds

This space is a Contribution to America's All-Out War Effort by The Mining Congress Journal



# *Looking Ahead!*

The home you're going to own some day; the security that your family is going to enjoy. The education you intend to give your children, the advantages you want them to have.

The new equipment you desire for your mine. They're the things no man will overlook; the things that every man wants. Their acquisition is the motivating force behind our American life.

Effort, work, progress to the ultimate victory is our one and only ambition for the duration.

And for the duration we recommend that you conserve by properly maintaining all of your mining equipment. Should a breakdown occur as they sometimes will phone our Emergency Repair Department and a fully trained engineer will be at your service to get your mine back in operation with repairs and replacements at a speed that will cut your "time down" to a minimum.

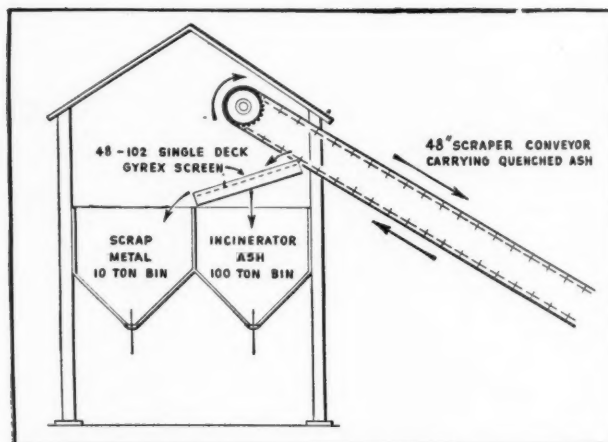
Write today for our complete catalog of modern mining equipment.



**ROBERT HOLMES AND BROS.**

BINS - GATES - LOWERING SPIRALS - DUST-OLATORS - SHAKING GATES

**DANVILLE, ILLINOIS**



## Pittsburgh Salvages 10,000 tons of Scrap —and nets \$60,000

Robins engineers and machinery often participate in interesting installations. Many of them are unusual, some actually unique. One in the latter classification came up recently in Pittsburgh. Mr. D. C. Agar, Managing Engineer of the Bureau of City Refuse, wanted to salvage the scrap in city residue agglomerate. The screening methods used in coke plants seemed a logical and economical method of separation.

■ A suspended-type Robins GYREX Vibrating Screen was installed where it would receive material from the final scraper conveyor . . . at a total cost considerably less than \$5,000.

■ At the present rate of recovery (and

current contract selling-price) the City of Pittsburgh is recovering 10,000 tons of scrap for the war effort . . . and will net \$60,000 a year from the salvaged metal.

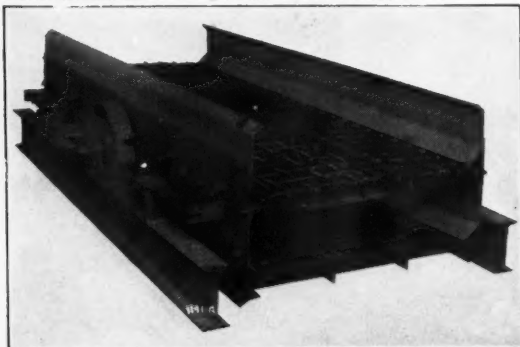
■ Robins engineers are at your disposal for advice regarding economical efficient applications of screens and materials handling machinery.

# ROBINS

CONVEYING BELT COMPANY

PASSAIC • N. J.

2-deck GYREX Screen showing Vibrator and base construction.



For Material Aid  
in  
Materials Handling

**It's ROBINS**

# MINING CONGRESS JOURNAL

Published for the Entire Mining Industry  
by The American Mining Congress  
H. C. CHELLSON, Editor

Volume 28 DECEMBER, 1942 Number 12

## *Metal Miners in War and Peace*

**M**INING MEN charged with the responsibility of providing raw materials for the winning of the worst war in history are making every hour of their precious time contribute effectively to Victory. We have been at war a little more than a year, and during that time our production of strategic, critical and other minerals from scattered mines throughout the Nation has reached new high levels.

So-called stock-taking of copper, lead, zinc and other metals occurred in Salt Lake City, Utah, in November, at a two-day War Metals Conference, held by the Western Division, American Mining Congress.

This on and off-the-record meeting afforded an opportunity for Washington to come west, to visit with the metal miners and get better acquainted with their problems; likewise it gave officials of the war agencies an opportunity to explain to the miners many of the responsibilities, practices and policies that must be considered for both the present and the future welfare of our Nation.

Total war demands maximum contribution of supplies by all industries. Metal mining is a unique industry. It has many complexities of ore deposits, and the problems of underground development necessary for future metal output require long range planning in war as well as in peace. As the industry is depleting its resources and producing all-out for war, it is also, so far as possible, looking ahead and thinking of the time when post-war problems become the talk of the day.

What the shape of things to come will be, after the war, is difficult to tell, but the experience of metal mining in this war has confirmed the statements repeatedly made by industry leaders during recent years as to the need for government recognition of its special problems.

Only four years ago the zinc industry painstakingly presented its case history to government officials urging them not to reduce its tariff protection by a trade agreement, in the face of threatening war. The tariff was reduced, and though a clear-cut case was made for relief through the "escape" clauses of the agreement, the facts presented were discounted or ignored. Development of new properties was discouraged, and today our war chiefs are worried over where the zinc for a long war is to be found.

Today, perhaps the "planners" consider as an accomplishment the closing of the gold mines, although practically no hard rock miners were thereby made available to copper and other mines and many communities that were the only bright spots in a depression are becoming ghost camps and their ability to create wealth and provide employment in the post-war era in many instances has been seriously jeopardized.

Leading men of the War Production Board at the Salt Lake meeting spoke highly of the work, spirit and achievements of the industry in the war effort. In the post-war period the industry can contribute much to rehabilitation as our Nation takes its place in world peace, providing the "planners" of the future don't persist in keeping it constantly behind the eight-ball.

## *A Tribute to Cooperation*

**L**OOKING back over eight years to the time when the present Coal Division of the American Mining Congress was first organized, and reviewing the Division's accomplishments during that eight-year period, a sincere tribute should be paid to the men on the committee who have contributed so greatly to the modernization of coal mining. Considering the high degree of competition which has always existed within the industry and its traditional characteristic of individualism, it is all the more praiseworthy that these men should discard tradition and work together in applying their combined knowledge and experience to benefit the whole of the industry. It is equally praiseworthy that the mine equipment manufacturers on these committees, during the times when there was not a sufficient volume of business to keep their plants running, would come together to work out ways for improving equipment design and construction, all in the interest of better coal mining.

These men have been real pioneers on two counts; not only have they developed machines and practices that have replaced hand mining, but perhaps even more important, they have broken through the barriers of "isolation" which for so many years had obstructed coal mining's progress, and have brought their problems out into the open where concerted action could be brought to bear on their solution. The coal industry owes these men a great debt. It is particularly fortunate that this movement was started several years ago, and that this cooperative spirit had been crystallized to its present point when it became so greatly needed in the war effort.

Since our Nation has undertaken an offensive war the demand for materials at the fighting fronts will call for greater output on one hand, and will limit mining supplies on the other. To meet this situation, greater ingenuity and responsibility on the part of operators, manufacturers and miners alike must be welded in the achievement of Victory.



These men  
were anxious  
to hear Wash-  
ington spokes-  
men

## Metal Mining Industry Holds War Conference

**E**XECUTIVES of mining companies, managers, superintendents, mining engineers, mine equipment manufacturers and top ranking officials of the war agencies and Army and Navy officers met for the metal mining industry's first War Conference, under the auspices of the Western Division, American Mining Congress, in Salt Lake City, November 16 and 17, to coordinate efforts and plot a 1943 graph for greater domestic production of essential metals needed to win the war. Problems of manpower for the mines, metal prices, production quotas and premium payments were brought out in the open and discussed. Priorities on mining machinery and supplies were clarified, and the new Controlled Materials Plan was explained; problems of strategic mineral production and Government financing were among the many matters of interest vital to mining and its welfare that were gone into so that the industry may produce at its maximum.

Attendance testified to the importance of the meeting, which was considerably larger than expected, with mining men from 26 States, Alaska and Canada eager not only to learn what war agency officials had to tell the industry but also to impart information to Government officials concerning the realities of trying to effi-

*Producers of war minerals and officials of the war agencies from Washington have outstanding meeting in Salt Lake City.*

ciently operate mines in a virtually controlled economy, which many believe is growing more topheavy with red tape. The two-day meeting was strictly devoted to the business of production of metals for war, with many off-the-record meetings which contributed much to the understanding of mutual problems of the industry and of the war agencies and the armed services. Operators had no doubts about the federal officials' willingness to cooperate and to clarify or remove doubts about matters not wholly understood and to help producers in the fulfillment of their objectives. Not all questions, however, could receive satisfactory answers, as the responsibility for correct reply and explanation apparently rested on shoulders other than those of some of the speakers.

Secretaries of western mining associations met Sunday afternoon and discussed the major problems of many of the mining States, involving the

production of strategic and critical materials.

The Conference was a clearing house for factual information that was given and taken by mine operators, manufacturers and Washington officials alike, and the meeting was considered by many as one of the most constructive ever held by the American Mining Congress. Some of the outstanding, interesting, informative and factual portions of the talks given at the meeting follow and the complete addresses of some of the speakers are presented elsewhere in this issue.

The keynote of the meeting was struck by Howard I. Young, President of the American Mining Congress, and President, American Zinc, Lead and Smelting Co., at the opening session in the Hotel Utah on Monday morning, when he said:

"This meeting is for the purpose of bringing together those of us who are out on the production line of



metals with those in Washington who are responsible for seeing that these metals are put in the place where they are most badly needed. This meeting is a large, round-table meeting. It is a meeting to enable you gentlemen to gather as much information as possible, and to get posted on anything that you consider of vital importance to the production of metals from your particular properties, and in turn the Government representatives will have an opportunity to learn from you the problems that are interfering with your production."

W. J. O'Connor, Chairman of the Western Division, American Mining Congress, and Manager, Utah Dept., American Smelting & Refining Co., welcomed the members to Salt Lake City on behalf of the Utah Metal Mine Operators Association and stressed the importance of the opportunity the meeting afforded.

John W. Haddock, Chairman of the newly reorganized Manufacturers Division, American Mining Congress, and vice president, Sullivan Machinery Company, pointed out the value of the Conference at this time and emphasized how manufacturers of mining machinery must depend upon raw materials before they can properly serve the needs of mine operators with equipment for increased metal production. He said:

"We find there are many common problems with the people we are trying to serve which are worthy of the time and the difficulty of coming to a meeting such as this and making it more fruitful than ever before. I would like to say just a word or two about the problems which manufacturers are facing—something of the way matters stand with companies like our own which are equipped to manufacture things out of metal.

"Probably the greatest handicap we have has been the battle for raw ma-



Howard I. Young, President, American Mining Congress . . .  
*"get posted on anything vital to the production of metals . . .  
 government officials also have the opportunity to learn from  
 you."*

terials. I doubt whether mining men generally, that is to say the operators of mines, really recognize and appreciate how much of a struggle it is for us to get the raw materials which we must have. Very fortunately for us, and for the industry, a mining branch of WPB was established, headed by Dr. Wilbur Nelson, and they have done a marvelous job. However, they have been badly handicapped in my opinion, and I think in the opinion of many who are familiar with the facts down there, by the lack of direct expression on the part of the mining men. Perhaps that is because they have done such a good job that the operators of the mines haven't felt the necessity—perhaps because such a good job has been done that

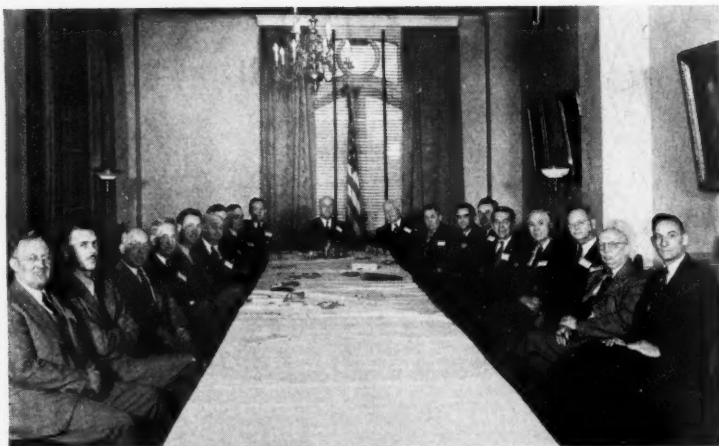
their other problems such as labor, taxes, etc., have seemed more important.

The materials problem is getting more and more difficult; and I would like to urge upon you that you recognize it as a major problem."

Julian D. Conover, Secretary, American Mining Congress, read telegrams from Lieutenant General Brehon B. Somervell and Senator-elect Albert W. Hawkes, who last year addressed the Metal Mining Convention in San Francisco on Industrial Relations. An announcement of the sudden death of "Bob" Linton, well known in the mining industry and a member of the Western Division, was a shock to many in the audience and a rising tribute was made in his memory.



Opening session . . . a large round table meeting.



Western mining associations . . . labor shortage, production from small mines, premium prices and quotas, access roads, etc.

Leading off the comments by officials of the war agencies, H. W. Dodge, Deputy Director General for Staff, WBP, read messages from President Roosevelt and WPB Chairman Donald Nelson.

"The White House,  
November 13, 1942.

"Dear Mr. Dodge:

"The Chairman of the War Production Board has directed my attention to a meeting being held at Salt Lake City of operators who can be assembled from the various metal mines of the United States.

"I know the miners and operators will not fail in their duty to produce and maintain the tremendous schedule which will be outlined at the meeting.

"Very sincerely yours,

"FRANKLIN D. ROOSEVELT."

The message from Donald Nelson, Chairman, War Production Board, was as follows:

"I am sorry that events and the pressure of responsibilities make it impossible for me to sit down with you at the Metal Mines War Conference and talk over mutual problems together. I know something of those problems, and I know their solution depends upon wholehearted, two-way cooperation.

"You can expect that kind of cooperation from the War Production Board representatives at your Conference, and I know there is no question about your willingness to do your part.

"In this war we are all dependent upon each other. The War Production Board depends upon you, and you depend upon us. All of Management is dependent upon all of Labor, and all Labor depends upon all Management. The men at the front depend upon us at home, and we are dependent upon them. That is why no one of us dares give less than the best he has got.

"I wish to take this opportunity to congratulate you men upon the marvelous job you have been doing in supplying the United Nations with such a large proportion of the raw materials we need to destroy the enemy.

"DONALD M. NELSON, *Chairman.*"

Commenting upon the importance of the meeting, Mr. Dodge said:

"This session of the American Mining Congress has been very aptly named 'The Metal Mine War Conference' on your program. In your round-table discussions and on your program you will have representatives from industry, the Army and the Navy, and from many departments of Government. The War Production Board has sent you experts on minerals, on mining, representatives of the Office of War Information, and Directors of Industrial Divisions who



Colonel C. B. Morgan . . . "to see that the Army gets theirs and the Navy theirs."

plan and help you execute the overall metal program. The assistant general counsel is here, and one of Mr. Donald Nelson's own assistants. These representatives from the armed forces and from government have come to confer with management and with labor of the American Mining Industry to make certain the war shall be won in the shortest time possible.

"We hope these meetings will inspire renewed and increasing effort to produce the metals so critically needed to insure victory. Let's make certain each one of us realizes his responsibility. Let's make certain we do our utmost to achieve. Let's make certain that we win this war."

Representing the Army and Navy Munitions Board, Colonel Clifford V. Morgan briefly described the respective functions of the various agencies in obtaining raw materials.

"By executive order, the War Production Board is, of course, responsible for getting the requirements of war material. However, it is our function to see that the Army get theirs, and the Navy theirs. For the past two years we have been working together, and recently the Army representatives and Navy representatives have moved nearer to the War Production Board. I want to assure you, newspaper articles to the contrary notwithstanding, that there is the closest harmony between the Army and the Navy and the War Production Board men who are here today, and those who are back in Washington continuing the work. The seven claimants which demand the material which you folks produce are each after their share of that which is necessary to carry on this war effort."

He outlined the approximate 1943 metal requirements, giving the following figures in tons of ore:

Antimony,	
short tons, over . . .	400,000
Chromite,	
short tons, nearly . . .	900,000
Manganese, nearly . . .	1,400,000
Mercury . . . . .	1,400,000
Tungsten, nearly . . .	30,000
Molybdenum, over . . .	13,000,000
Vanadium, nearly . . .	4,500,000
Copper . . . . .	270,000,000
Zinc . . . . .	35,000,000
Beryl, over . . . . .	5,000

Commander Small, Deputy Director of the Resources Division, Army and Navy Munitions Board, emphasized the importance of greater production and touched upon the growing problem of absenteeism, and the difficulties of obtaining equipment. He said in part:

"The overall figure of 10 percent absenteeism means that we are only producing 90 percent of the metals we could produce, and when I know how desperately we need those metals, I feel pretty badly about it. If you urgently need equipment, or machin-

ery, I am pretty sure you can get that if you present your case clearly, simply and honestly through the Mining Branch. Everyone in Washington is cooperating to see to it that nothing stops you, that nothing hinders you from accomplishing the best results possible."

Mr. Young introduced Frederick M. Eaton, assistant general counsel of the War Production Board, and Morris Creditor, special assistant to War Production Board Chairman Donald M. Nelson. These men addressed the meeting briefly and said their purpose in attending was to be available for consultations regarding specific problems of mineral producers.

Dr. Wilbur A. Nelson, Director of the Mining Branch, WPB, brought the priorities situation up to date.

"In recent weeks you have heard a great deal of talk about the new Controlled Materials Plan which was announced in Washington last week by Donald Nelson. While this is not a time to go into great detail, I would like to touch briefly on this plan, for it is of such fundamental importance that I urge you to start thinking seriously about it.

"For the present, steel, copper, and aluminum are the only materials covered by the Controlled Materials Plan. Others will be added as the plan develops. Effective for the second quarter of 1943, all such controlled materials will be distributed under this plan, and in no other way. This includes repair, maintenance, and operating materials. Fundamentally, the plan is simply a matter of allocating materials against a known supply to fit a specific program. This differs from the present and earlier priority systems under which preference ratings were given without taking into account how many others of the same rank were issued.

"You might say that a controlled materials plan is like a good bank account; you issue checks against a known balance. The priority system was like issuing checks when you didn't know whether you were over-drawing your account or not, but hoping that the bank would let you get by with it.

"Your supplies as well as your output will be controlled by this plan, when they are controlled materials. Information centers are being set up to keep you informed of the detailed operations of the plan as procedures are established. Inasmuch as this is a brand new plan, many details of operation for specific industries have yet to be established, and I might say that we are working on some of those details with the makers of mining machinery at the present meeting."

The problem of more copper was discussed by F. H. Hayes of the Copper Division, War Production Board. He pointed out that operators seeking help from WPB must present their



**John W. Haddock, Chairman, newly reorganized Manufacturers Division, American Mining Congress . . .** "mining men generally must recognize the problems manufacturers are facing in trying to serve them."



**Julian D. Conover, Secretary, American Mining Congress . . .** presents a message from Lieutenant General Brehon B. Somervell.

complete facts to proper Washington officials.

"The idea of reopening properties is to get copper in time to help win the war. In other words, it isn't to prospect properties which have no developed ore reserve. We haven't time to start from the grass roots and find out whether or not the property has ore, and then equip it, construct plants, and get it into operation.

"However, if properties do have developed ore reserves, and they are now under water, or are now unequipped, aren't ready to go, we would like to have you present to us in Washington a statement regarding the possibilities and the necessities in order to put such properties into operation. One of the most important

things in presenting one of those projects is to make a definite statement about the ore reserves, and to support your statement with maps, sections, and data showing how you calculated the reserve. You must realize that before money can be spent for the Government, they have to have a basis on which to make that expenditure, and the first and most important step is to know that we are going to get ore for the money."

#### **Permission for Block Leasing Would Increase Metal Output**

W. C. Page, Zinc Branch, WPB, pointed out the importance of block leasing. He said:

"It is hoped that within a reasonably short time, measures can be



taken and worked out to insure the resumption of block leasing in Utah. I believe an important source of additional zinc can be developed and produced through block leasing.

"I want to take this occasion to say that the Zinc Branch has had the fullest cooperation from the zinc mining industry. However, we still need greater production of zinc concentrates."

The importance of renewing the block lease system was also mentioned by W. Earl Greenough, Lead-Tin Branch, WPB. Mr. Greenough, expressing his personal views about this situation, said:

"The great problem is really that of manpower. You cannot produce material of any kind without labor multiplied by hours. A number of the operators in the Salt Lake area and I started to solve this problem two or three months ago in a manner we thought might be helpful. One idea we had was that we should restore block leasing because that would bring in a supply of men, older men, who have been sitting on benches in these mining towns—good miners that could not get into this war, but men really good for four or five or six hours of good labor a day when every little bit helps.

"Another problem that we have in Utah is the statute prescribing that in any mines, mills, or smelters of the state, 8 hours out of the 24 was a shift's work, and that it was a misdemeanor for an employer to hold a man on the job any longer. Another statute prohibited the use of females in the non-ferrous industry. Some operators interpreted that so broadly as to infer that you couldn't have a woman employe inside the premises, even in your offices.

"I wish to say that the leaders of labor in the various unions have really been very helpful in trying to solve



William J. O'Connor, Chairman, Western Division, American Mining Congress . . . "the mining industry will not let the Army and Navy down."

these problems. They are trying with us now to carry a message back to all their men.

"We went to Governor Maw, of this state, and succeeded in getting from him, or rather, from the Attorney General, an interpretation. They said that certainly no greater emergency could be conceived than the emergency we are now in, and for that reason that this eight-hour limitation should be suspended for the duration. This provides a means whereby longer hours can be worked. We have been limited to eight hours overall, and that is too short because after all there are only about six hours or so

of possible productive work out of an eight-hour shift.

We also know that a lot of mines are operating close to the margin, and if they are to pay time and a half for overtime contemplated by a longer shift, they will probably need some other help, to get higher returns on their production.

"After all, we are all talking and thinking of greater production. We can only get that production by having available in some way more man-hours of labor in the industry, and that includes the smelters as well."

The subject of metals going into ferro alloys, manganese, chrome, tungsten and nickel was discussed by Miles K. Smith. Mr. Smith's paper is given in full on page 35 of this issue.

Director of the Miscellaneous Minerals Division, Richard J. Lund, presented a paper which appears in full on page 34.

### Colonel Ginsburgh and Senator McCarran Speak on the War and Silver

At the Monday luncheon at the Hotel Newhouse, registrants heard two outstanding talks, one by Colonel A. Robert Ginsburgh, Director of Industrial Relations for the War Department, who was introduced by Chairman W. J. O'Connor as a "fire ball" who visits the nation's industrial war plants and mines, always ready with an important war message for the workers, operators and manufacturers. Excerpts of Col. Ginsburgh's interesting address follow:

"For the past six months, I have been very intimately associated with the mining industry. In May, the Under Secretary of War, Judge Robert P. Patterson, ordered me to conduct a copper mining rally in Butte. That rally was held on June 4. I can't say very much about it; I think a number of you have heard



Luncheon at the Newhouse Hotel . . . no "business as usual" formalities preceded the two good speakers at this occasion.





**Colonel Robert A. Ginsburgh**  
... "the progress of the war  
as a background for your de-  
liberations and discussions."

about it, and some of you who are here today were present on that occasion. This marked the beginning of our morale activities in the copper field in which management and labor have both cooperated. I had an interesting visit to Arizona last month when I had the honor to give the Army and Navy production award to seven copper mines.

"When the Army mobilized the miners in Sparta, Wis., it was my job to talk to them and to urge them to return to the mines. You will have to admit that was a rather novel experience. I was very much pleased at the reference this morning made by the speakers which indicate that the experiment is proving rather successful. The experiment must succeed, and results in greater production will have to be shown.

"When I received my invitation to speak before you, I of course had to get permission from the Under Secretary of War. His responsibility in production is known to all of you, and you know he is thoroughly familiar with all of your problems. He suggested that I talk to you about the progress of the war as a background for your deliberations and discussions, so here it is.

"The attack on Pearl Harbor took place almost a year ago. It is a fair question for any American to ask, 'How are we doing?' If I had to answer that question in two short sentences, I would say: First, we are doing better than anyone had a right to expect; second, we are not doing enough to give us any right to get 'cocky.' Now, why are we doing better than anyone had a right to expect? Simply because we are trying

to do in two years what the Germans have been doing for 24 years, what the Japs have been doing for 38 years, what the Italians have been doing for 20 years. That is, getting ready to wage an all-out war.

"We are indeed an ingenious people. We have accomplished and can accomplish miracles, but now we face our greatest test. We must not for a moment belittle the forces which are arrayed against us. We may hate our enemies; we may sneer at them, at their ways, but they are professional warriors. By comparison, we are amateurs. We are learning the game. We are learning faster than we did in 1917, but it is our enemies who have the veteran troops in the field. The Japs have been fighting for ten years; the Italians for five years; the Nazis for three years. We have been at it less than a year. To catch up with our enemies in two years and to pass them in three—those are our objectives, and, based on our achievements of the past two years, we have every reason to feel that in 1943 we will hold the initiative. We will do the attacking, and we will keep our enemies guessing as to where the next blow will fall.

"Slowly, the tide began to turn with the Battle of the Coral Sea. In that great engagement, our Navy and our Army Air Forces turned the enemy back from the Australian coast and punished him unmercifully. But his punishment there was nothing compared to the fierce hail of bomb, shell and torpedo which met him at Midway when he made his greatest bid to break through our Pacific defense line. Head-on, we welcomed him and smashed his attack and his ships to pieces. Midway was a victory of the greatest magnitude. History may place it among the decisive battles of the world. On the basis of that defensive triumph, we moved to the offensive ourselves and seized the Solomons. That chapter of the war is still being written with our soldiers, marines, and sailors battling the Japs at every step.

"And now we have begun to shake a little confidence out of the German people and out of the Italians, too, if they have any left. Our campaign in Africa may change the whole aspect of the war. If wholly successful, it will accomplish these things:

"It will break up the Nazi scheme to swallow up France and the French possessions by way of Vichy; it will complete the destruction of Rommel; it will deliver a solar plexis punch to Mussolini and Italy; it will give us air and sea bases from which we could carry the war to Europe; it will open up the supply lines through the Mediterranean and will do away with the necessity of proceeding to Cairo and the Near East by way of a voyage around South Africa, thus saving valuable weeks of time and enabling



**Hon. Senator Pat McCarran, Nevada**  
... "47,000 tons of silver  
for war production."

us to get more sailings out of every ship.

"Our planes and tanks are doing a fine job in Africa. The leaders of our Army are putting in 12 to 16 hours a day on the job of building a military machine that can't be stopped. The enlisted men, heedless of hours, are interested solely in training themselves into the world's best soldiers. From general to private, everyone works in deadly earnest, determined to fit himself for a complete showdown with Jap and Nazi forces.

"America's industrial front is working in the same deadly earnest. The job has its difficulties. Americans are unaccustomed to restraints of any kind. They are used to dealing in the free market of free competition. Now the Army and Navy are the only customers. Management must acclimatize itself to the wartime economic world. It is the Army and Navy who lay down the specifications that industry and labor must meet. Industry and labor are meeting them on time and ahead of time. The peace-time economic machine has been converted to war. It has not functioned smoothly at all times, but production has shattered record after record.

"Let's get down to a few copper facts, and to you they are worth repeating. Without copper, we could not send a single bomber or fighter into the air. Every flying fortress that goes into the air contains one ton of copper. Without copper, we could not run our battleships and cruisers. Without copper our tanks wouldn't be in it with the enemy's. It takes 600 pounds of copper just for one medium tank, and we are building those tanks now by the thousands. One 37-milli-

meter anti-aircraft gun fires a ton of copper every 20 minutes of action. Without copper, we would be out-matched in artillery fire of all kinds. Copper gives us the precious wire on which the Signal Corps depends to get the messages through. Without it, our radio communications would be worthless. The perfect coordination of land, sea, and air forces, on which the lives of soldiers, sailors, and marines depend, would be impossible. The Signal Corps needs five thousand tons of copper every month just for the Army's communications needs.

"And copper is only one of the basic non-ferrous metals which play vital roles in the construction of the munitions of mechanized warfare.

"Some think that after we have disposed of the Nazis, it will be a simple job to clear up the Japs. There is no reason for any such optimism. The Japs have proved their toughness; they are going to be hard to beat. We have to meet our enemies gun for gun, tank for tank. Yes, and we have got to meet them civilian to civilian, sacrifice to sacrifice, for war is still a struggle of man to man. Cost what it may in blood and self-denial, we must destroy our Jap and Nazi challengers. Only when that day comes, will it be safe to think that we are safe."

The Honorable Pat McCarran, senior Senator from Nevada, left no doubt among his listeners that there was much misinformation being circulated in the press about the posi-

#### ATTENDANCE AT WAR CONFERENCE

In spite of hindrances in war-time travel, the attendance at the Salt Lake City meeting revealed the widespread interest in the program and the need for an opportunity for men of the industry to talk freely with Washington officials.

Besides attendance from all the western mining states, there were operators from Texas, Wisconsin, Minnesota, Pennsylvania, New York; of the total of 471 who registered there were 172 from Salt Lake City, 76 from other parts of Utah, and 263 from 26 other states, Alaska, Canada and the District of Columbia.

tion and importance of silver, both in the war effort, and in our own as well as foreign currency. Parts of his address follow:

"My friends, the representative of the Army who just addressed you spoke on the subject of copper, and in that we are very much interested, but the subject of silver and the subject of copper are so much allied that we can not part the one from the other. Ninety percent of all the silver pro-

duced in America today, eliminating one mine, comes as a by-product from copper, lead, and zinc.

"Not long ago—some months ago—it was my privilege to be called upon by the Secretary of the Treasury, at which time he asked that I call together the 'Silver Senators'—the Senators who were interested in silver, and I did so, and Mr. Morgenthau, Mr. Jesse Jones, Mr. Donald Nelson, and all their fine staff of experts came to my office and sat with us there for a couple of hours and discussed the question of silver. It was then and there that the Secretary of the Treasury said, 'We would like to hear from Mr. Donald Nelson, the head of the War Production Board.' Now Mr. Donald Nelson went at the subject from a practical standpoint because Mr. Donald Nelson is a practical man. He said, 'We understand there are 47,000 tons of silver in the Treasury of the United States that does not stand behind the outstanding silver certificates. We would like to know if you gentlemen who represent the silver cause would agree that we might use that silver for non-consumptive purposes.' And he went in detail into what those avenues and purposes were.

"Much discussion took place in that two hours in my office. At the outset, it was agreed that the 47,000 tons of silver in the Treasury of the United States that was free from obligation



Left to right: Morris Creditor, special assistant to Chairman Donald M. Nelson, WPB; W. J. O'Connor, Chairman, Western Division, AMC; Howard I. Young, President, American Mining Congress; H. W. Dodge, Deputy Director General for Staff, WPB . . . one of many huddles.

might be used by the War Production Board, or might be used by industries, if you please, under the direction and guidance of the War Production Board for non-consumptive purposes, so that it would always remain the property of the Treasury of the United States, and be returned to the Treasury of the United States when the emergency was over. May I say to you men who are engaged in the mining of war-essential metals, and from whose mines there come not only the war-essential metals, but silver as well, that one very high official sitting in that gathering that day said, speaking of the 60,000 tons of monetized silver that were in the Treasury then, 'It is a very comfortable feeling that America should have this fine gathering of silver in the Treasury of the United States.' I thought that was a very fine expression because it is so much a part of my own thought. And so the 47,000 tons of silver that is not obligated for the currency outstanding is being day by day shipped out by the Treasury of the United States into war industry. We are sending a great quantity of that silver into the Basic Magnesium plant in southern Nevada, there to be used as bus bars. We are sending it out into other war-essential industries to be used for the duration of the war, and then we are holding back some 60,000 tons of silver that stands behind the money of this country.

"That 60,000 tons of silver in the Treasury of the United States is the envy of the world. England is today sending a plea to us that we give her two and a half million ounces of silver per month. Australia has sent a plea to America to send her silver. Iran, Iraq, Turkey, India—everyone of the countries of the Old World are pleading that we send to them silver. What for? Oh, somebody said, 'For industrial purposes.' That isn't all. It is hardly for monetary purposes. Silver is more in demand today than it has ever been in all the history of civilization. I repeat that statement lest someone might contradict it: Silver is more in demand today than in all the history of civilization. Why? First of all, it has become known as an industrial metal. That's one phase of it, but there is something more than that. There are those countries in which teeming millions exist that know only silver as a basic money. Today, the people of India have raised the price of their silver, and are imploring that we send more silver to them. Today, in France, the masses of the people of France are praying—clamoring for silver. I will tell you why. Those governments have issued paper money, paper money, paper money, until the masses of the people of the subjugated and, indeed, of the non-subjugated countries as well, have lost faith in controlled currency, because they know the printing press runs on forever, and they have gone

through a period in their history when they could hold a bale of the paper in their hand, and couldn't get a loaf of bread for it, but the fellow with a little piece of silver coin tucked away in his pocket could buy the necessities of life; and so the teeming millions of the world are asking for silver."

"My friends who are here representing the War Production Board and our great groups in Washington, this group that sits before you today is not a group that is looking for profit; they are a group that is working to produce, and if you will only give them the opportunity to produce, they will put out the metal for you."

The Senator concluded his address by appealing to members of the industry to talk to the men from Washington from the practical standpoint, so that they might better understand the industry's problems.

### **Monday Afternoon Session— Furnishing Raw Materials, Mining Loans**

Returning to the Hotel Utah for the afternoon session with Worthen Bradley, president, Bradley Mining Company, and president of the California Chapter, American Mining Congress, as Chairman, members heard a talk by Charles B. Henderson, chairman of the Reconstruction Finance Corporation, and president of Metals Reserve Company. Mr. Henderson's address appears on page 32 of this issue.

Following Mr. Henderson, Senator-elect James G. Scrugham of Nevada addressed the gathering on the subject of Metals for Munitions. He stressed the importance of being farsighted in this war and urged that a most careful and far-reaching study be made to utilize our so-called sub-marginal ores, such as those of bauxite, manganese, and other non-ferrous metals vital to the successful waging of the war. He said:

"The furnishing of raw materials by American industry for the winning of this war is an extremely complex problem. It is limited not only by technical difficulties but also by the very structure of our industrial enterprises. This nation with its apparently unlimited wealth, has led itself into thinking we must concern ourselves only with the most economically worked deposits. This situation was due to operations under normal business conditions.

Today we realize that our belief in our unlimited mineral wealth has been a real handicap in the prosecution of the enterprise in which we are now engaged.

"We find we must tighten our industrial belts because we now know that we lack many of the essential minerals that we thought we had in plenty.

"Industry in this country has been



**Worthen Bradley, Chairman . . .**  
*"developing strategic mineral mines."*



**Senator-elect James G. Scrugham, Nevada . . .**  
*"a far-reaching study in utilization of our sub-marginal ores is necessary."*

predicated in the past on the utilization in general of the high grades of mineral ores; consequently, the processes utilized for the mineral ores of these areas have been likewise predicated on an ample supply of these ores on a world wide basis. By comparison, we now know that countries like Germany and Sweden have successfully developed their industrial structure because they based it almost entirely on the utilization of the raw materials obtainable within the confines of those countries."

Discussion took place involving such subjects as the purchase of lower grade manganese by the RFC, access roads for mines, mine development





Serious men with heavy responsibilities listen to General McSherry . . . "you are going to get your men by training them yourselves and we will help you."

loans, price schedules for tungsten, and an animated exchange of views as to what constitutes prospecting and development at a mine in connection with the various types of RFC loans.

Dr. R. R. Sayers, director, U. S. Bureau of Mines, and R. E. Snoberger, Salvage Division, WPB, who were scheduled to talk on the Bureau of Mines in the war program, and the 1943 scrap salvage program, respectively, were unable to attend the meeting. Dr. Sayers' paper will appear, however, in the January issue of MINING CONGRESS JOURNAL.

Monday evening, operators interested in the production of zinc, copper, lead, silver, gold, quicksilver and metals such as tungsten, chrome, manganese, molybdenum and vanadium met in separate rooms with Government officials, to thresh out particular problems requiring detailed explanation or clarification. These meetings proved most worth while, and both operators and officials from Washington were greatly pleased to have the opportunity of sitting across the table to clarify problems and promote more effective methods of boosting mineral output for the war.

#### **Sessions on Tuesday Brigadier-General McSherry Discusses Manpower**

Tuesday's morning session was devoted to the all-important subject of Manpower, with talks by Colonel H.

Arnold Rich, Utah Director of the Selective Service System, and Brigadier-General Frank J. McSherry, Director of Operations for the War Manpower Commission. J. B. Haffner, general manager, Bunker Hill and Sullivan Mining and Concentrating Co., served as chairman. Major General Lewis B. Hershey, Director of Selective Service, was scheduled to speak, but pressure of important work in Washington prevented his appearance; in his absence Colonel Rich presented an interesting account of the operation of the Selective Service System, pointing out the importance of needed skilled men in the armed forces as well as in war industry. His address is given in full on page 36.

Brigadier-General McSherry prefaced his impressive talk on manpower by briefly mentioning his background in the mining industry.

"It is a rather odd coincidence: the first war took me out of the mining industry, and the second war hands me some of mining's manpower problems, so I guess I cannot separate myself from the mining industry.

"You have your individual problems which by themselves could be solved very simply; but when you consider the problems of thousands of people in the same position that you are in, with a limited supply of persons to do the work—and remember, that each individual has his own ideas, his own psychology, his own wants and de-

sires; that many of these individuals are formed into groups of one sort or another that have certain ambitions—and when you try to handle these matters for 133 million people, you begin to realize that we have a manpower problem in this country, and a problem of the first magnitude.

"You men know that the problem of manpower isn't as simple as most people think it is. It isn't easy to solve.

"Of course, it is going to come to priorities. There is no question in my mind that we will have priorities of manpower, just the same as we have priorities of materials.

"You are going to get your men by training them yourselves. Your skilled men have to be trained, and trained by you. You have to do the job yourself, to train these people, although we have some help we can turn over to you. We have a training group and an apprenticeship group who specialize on training problems, and some of you have had benefit from their services. I am sure they can be of help to you, and I think you should call on them.

"Your problem, of course, is a very well known one throughout the country. It became apparent early last year that we were going to have a manpower problem in non-ferrous metal production. There was a lot of talk about it, and it came to the attention of the War Manpower Commission and the War Production Board



and other agencies, and you probably are familiar with what has been done.

"We immediately saw that the initial step was to get the mine owners to utilize the services of the United States Employment Service. I think when this effort started, there were very few, if any, of the major companies utilizing the Employment Service. Now, it is not only essential that you give your needs to the Employment Service so that they may help you, but this gives us the picture we need to start to solve this problem. We cannot solve the problem on data that is incomplete, and the United States Employment Service, under the Manpower Commission, is our data-gathering agency. We must have information down in reliable form before we can take any action to solve your problems. It is necessary for us to have that to go before any of the other agencies to get their help in solving the problem—the War Labor Board, the War Production Board or any other agency that has anything to do with it. So we want you to utilize the Employment Service—not only that it will help you get more recruits, but it will give us the information necessary to help you solve your problems.

"The gold mine closing order was primarily designed to help non-ferrous metals. Of course, there was another reason: gold wasn't needed and the materials used by the gold mining companies had to be produced, and it took labor to produce these materials which were utilized in the gold mines.

"Then there was the employment stabilization agreement which some of you stayed in Washington to help work out. That has as a whole done some good. I think it has helped fix the interest of the worker, of management, and government on the problems of the non-ferrous mines, and if it accomplished nothing else, that one thing was very helpful.

"As the previous speaker said, we have furloughed some 4,252 soldiers for work in the non-ferrous mines. Now, all this has relieved the pressure upon the non-ferrous mining companies, but it is not a permanent solution of your problem. We need some 3,400 workers on open orders for the mines of the country today in these twelve states alone, besides some that are needed in other states. Those soldiers cannot be left with you permanently. They have to go back to the Army sooner or later. The blanket deferment of the draft cannot be permanent. What we have got to do is work out something permanent to solve the non-ferrous metal labor problems during the period that we have this lull. As I understand it many people that leave the mines in the summer time go back in the winter, and probably for the next few months that shortage won't be acute. We must work out a solution so that



General McSherry . . . "we cannot solve the problems on data that are incomplete."

next spring we won't have a repetition of what occurred this spring.

"The previous speaker mentioned National Service. Whether national service comes is dependent on you. Your representatives in Congress must make the decision, with the President of the United States, as to whether we need National Service or a labor draft. The people of the government at work, like myself, are pick and shovel people. We don't make those decisions. We can present facts, tell how serious the problems are, but when it comes to the problem of making the decision of whether or not we shall have National Service, that rests entirely with the President and the National Congress. They are the ones that will make that decision, and you people, citizens of America, are the ones that elect the Congress, and have more influence with Congress than anyone else."

Captain John Edwardson, Industrial Service Division of the War Department explained the importance of management's responsibility to maintain the morale of miners, engineers and office staffs, and what the Army will do to help management reduce absenteeism and increase output. He said in part:

"We have three parts to the Army morale program. A great deal of time and effort has been spent on our program as it pertains to the non-ferrous metals industry. Copy and maps have been prepared and will be released to the newspapers of this community at periodic intervals, to be carried as editorial matter and as ads featuring the pictures of prominent officials in our Government, telling the need of the Army and Navy for the metals you produce.

"The release of these data will be through the Office of War Information, and undoubtedly in the next few weeks you will see in the papers in your community the news reels and ads as set up.

"The second part pertains to brief radio programs describing what miners are doing to produce copper or lead or zinc to help win the battle, and the third part of our program concerns what you do at your own properties."

Following these talks there was animated discussion of the whole manpower problem, including reference to the suspension of annual labor on mining claims, the closing of the gold mines, the merits of releasing soldiers experienced in coal mines for work in metal mines (a representative of one large copper mine stated that 750 coal miners had been hired and that they would be glad to have 750 more), needed manpower at smelters, the importance of proper housing for single and married miners, etc.

A luncheon meeting was held at the Hotel Utah by the Board of Governors, Western Division and Board of Directors, American Mining Congress. Brigadier-General McSherry was the guest of honor. Following brief reports by officials of the American Mining Congress there was an off-the-record discussion on the manpower problem with General McSherry.

Tuesday afternoon found representatives of mine equipment manufacturers assembled to ask questions regarding the latest in priorities and the Controlled Materials Plan. John W. Haddock, chairman, Manufacturers Division, American Mining Congress, served as chairman. Present to explain and answer questions were Dr. Wilbur A. Nelson, and Lane Hildreth, chief of the machinery section, Mining Branch, WPB (now known as Mining Equipment Division, WPB). Dr. Nelson announced that after the first of the year a certain number of industries would have an AA-1 rating for raw materials needed for machinery repair parts, and that list included the mining industry. Mr. Hildreth suggested that manufacturers should investigate every possible

source of supply that is available to them before requesting emergency ratings.

### Premium Prices and Quotas

A subject which has always created much discussion in the industry, and has frequently been misunderstood, the problem of premium prices and production quotas for metal mines, was considered at the Tuesday afternoon session, with E. H. Snyder, general manager, Combined Metals Reduction Company, serving as chairman. Mr. Snyder's experience in managing many zinc and lead properties has brought him very close to the problems of premium prices, and the discussions he encouraged did much to contribute toward a better general understanding of the subject. In opening the meeting Mr. Snyder said:

"We have before us the problem of Metal Prices, Quotas, and Premium Payments. We have three gentlemen from Washington who have been up to their necks in this problem for many months, and sometimes we may think they are on the wrong side of the table from us, where as a matter of fact they are on our side.

"The matter of price as between the buyer and seller has always been one on which you could start a war, an argument, or fight at any time, but we don't intend to do anything like that here this afternoon because I assure you the gentlemen on this platform are very sincerely working for your interest. The object of this meeting is to let these men from Washington know why we need a better price for the non-ferrous products."

The three papers presented at this session are given in full in this issue, that of Donald H. Wallace, Assistant Administrator, OPA, on page 27; John D. Sumner, Price Executive of the Zinc, Lead and Tin Branch, OPA, page

29; and Jesse L. Maury, Quota Division, OPA, on page 30.

Discussion following these papers involved phases of mining economy which will confront operators during the two and one-half year life of the premium price plan, of which more than 10 months have passed. It was brought out that any threat of lower tariffs for zinc after the war will ruin the industry, and that zinc and other mines must be allowed sufficient profits to maintain ample ore reserves for a long war—which President Roosevelt says it is going to be. A longer period than two and one-half years for premium prices was mentioned as necessary as it takes that much time and longer to bring new mines and produce enough ore to justify the project.

A question was asked if the \$1.00 a day increase in Idaho and Utah miners' wages was being considered by OPA in setting premium prices and quotas. The reply was that close to 30 mines had been granted these wage increases and that OPA was prepared to adjust quotas to absorb the extra cost of that wage increase, insofar as it cannot be absorbed by a reasonable operating margin already in existence at that particular operation. OPA is ready to take this action when the wage increase has been authorized and it will be retroactive to the date of the wage increase.

The new Rule 13, made to place premium payments on a uniform basis and to simplify the administration of the program, was explained by Mr. Maury.

"The new rule will become effective December 1, 1942. It will place all shippers upon a uniform basis insofar as they ship to similar plants. There are two general classes of shippers defined in the rule. One is a shipper of ore to a custom mill where the ores



E. H. Snyder, Chairman . . .  
"these Washington officials are  
on our side of the table."

are so commingled that they lose their identity and recoveries from individual lots cannot be calculated, and the premium payments will be based on certain percentages of the ore as it enters the mill-head. Those percentages are: copper, 87 percent; lead, 86 percent; zinc, 77 percent of the metal contained in the ore, not the resulting concentrate. A minor class within that class are shippers to Waelz plants.

"The other class of shipper is a shipper of ores or concentrates directly to a smelter for direct smelting. Those are divided into three general classifications: shippers of copper, shippers of lead, shippers of zinc. And the terms, the percentages of metal content of those direct smelting ores or concentrates are specified in the rule."

Another question discussed was that regarding overtime pay in Utah above the eight-hour collar-to-collar shift—a law in that state which many consider is retarding production. An OPA official said Government agencies stand ready to remove that sort of barrier to maximum production, and the matter of overtime pay for the additional hours would be considered by the Quota Committee.

Mr. Maury pointed out how work of the OPA Quota Committee could be facilitated if operators would supply adequate information as requested in the various forms with respect to the property seeking premium prices.

Chairman Snyder's closing remarks struck a spirit of cooperation when he said:

"I think it has been apparent to you gentlemen attending this afternoon that we have a very constructive group handling our quotas. I think you are impressed that they are absolutely fair, and trying to do the best they

Left to right: Dr. Wilbur A. Nelson, Commander J. D. Small and John W. Haddock . . . in this war everything is different from the last.



can for the Government and the country as a whole, as well as to keep your industry right side up, and it takes a lot of time for a department to analyze the balance sheets, the production, etc., etc., of these mines. I think when we have got two or three of them, we feel we have got a headache, and we can appreciate the job that has been imposed upon this Quota Department to try to get the right answers.

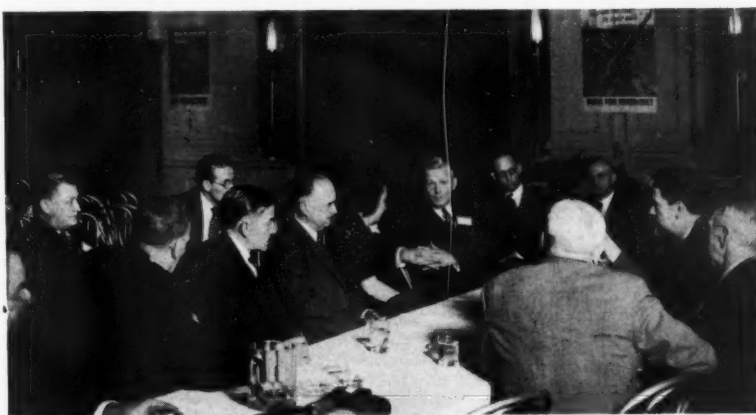
"I have found the Quota Department very fair in making quotas retroactive when the facts became apparent. I want to call attention to the fact, gentlemen, that at the present time we have several million Russians and several million Chinese doing the job that will have to be done by Americans in the event that we don't get materials to those Chinese and Russians. You can measure any shortage in production of these vital metals, not in



Officials of Zinc Branch, WPB and OPA in night session . . . what shape will the zinc mines be in at the end of 1943 and 1944?



Meeting of WPB Copper Branch officials and producers . . . how much more copper is really needed?



Silver . . . more is available for the war effort . . . demand for silver as money increasing in all parts of the world.

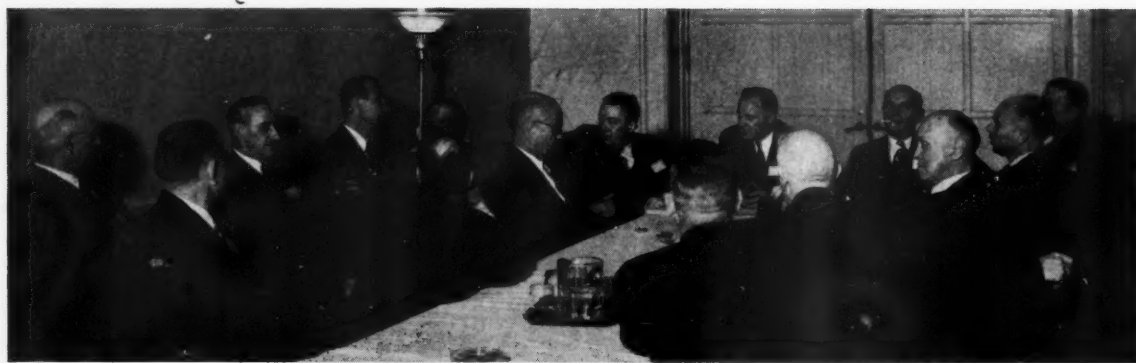
money, but blood. For that reason I suggest if you have a quota number that you go ahead, get your production now, mine those marginal ores right up to the limit of the cash you have, and when the facts become apparent, I am sure you will find the Quota Department will be behind you to see that you get a square deal for doing what was right in the interest of more production."

President Young expressed the thanks to all the speakers in these closing words:

"I do want to express to Dr. Wallace and Dr. Sumner and Mr. Maury who have appeared here this afternoon, and to all those from the various departments of Washington who were here yesterday and this morning, our sincere appreciation of their giving of their time to come here and meet with us and give us the opportunity to get first hand information on the vari-

(Continued on page 38)





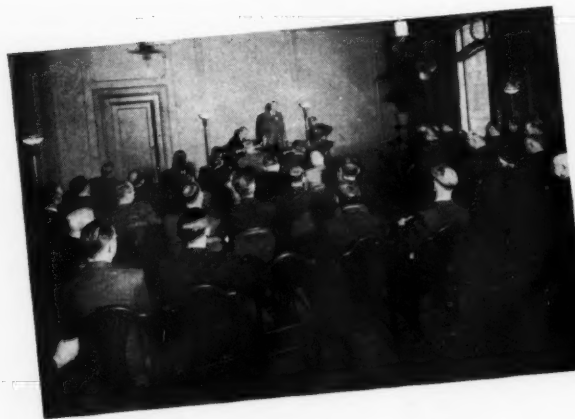
*Lead . . . supply not as tight as other base metals.*



*Ferro-alloys minerals . . . tungsten, vanadium, chrome, manganese, molybdenum needed for tanks, ships, guns and aircraft.*



*Gold . . . closing order L-208 a fizzle.*



*Manufacturers meeting . . . Controlled Materials Plan brings changes in allotment of raw materials.*



*AMC Western Division and National Board of Directors meet . . . General McSherry talks off the record.*



# Price Control of Metals

## *An Explanation of the Objectives Involved in the Premium Price Plan*

By DONALD H. WALLACE

Assistant Administrator  
Office of Price Administration

A YEAR AGO last September Mr. John Hamm, Deputy Administrator of OPA, spoke to you in San Francisco on price control with special reference to metals. I reread his speech a few days ago. Some of it now sounds definitely dated. Both price and production problems have become much more acute in the intervening 14 months. In the course of his speech he sketched some of the ideas which became embodied a few months later in the Premium Price Plan. I guess all our ideas on that plan have changed some in the past year. I know mine have. At that time we in OPA had only the rather crude outlines of such a plan. And I imagine from some things I have heard that some of you regarded this plan as a sort of crazy idea. It is now obvious to all that the Premium Price Plan has demonstrated its worth as a flexible pricing method which can meet the necessities of war-time pricing.

Total war demands maximum production of essential commodities with minimum inflation of prices and of the Government debt consistent therewith. The supply problems of total war—i. e., rationing of supplies and requirements of goods and manpower—cannot be solved effectively without a framework of relatively stable prices. Yet prices must be administered so as to permit and facilitate maximum needed production of each essential commodity. As conditions change prices must sometimes be changed. The Premium Price Plan for copper, zinc, and lead enables attainment of these objectives even under changing conditions.

Last February, in speaking to the American Institute of Mining and Metallurgical Engineers, I described briefly the new Premium Price Plan and explained the purposes as follows: To facilitate maximum production by removing any price barrier thereto, to prevent unnecessary price increases, and to assure that maximum prices are generally fair and equitable to buyers and sellers. In industries such as mining, where there is a wide variation in cost between different parts of the total available output, these objectives can be attained *only* by the use of dif-

ferent prices for different parts of the total supply.

Under the Premium Price Plan high-cost ores which cannot be profitably mined at the ceiling price receive higher prices which enable their production. Since the high prices are paid only for the high-cost parts of the supply there is a large saving to consumers. In the case of these metals the Government is, of course, a very large consumer. If the price for the whole supply of each of these metals were permitted to rise to the level necessary to permit production of the high-cost parts of the supply the total bill paid by the Government and other consumers would be very greatly increased. Since the requirements of total war make it necessary that the Government finance its purchases in large measure through borrowing, every dollar of increase in the prices of war goods means an increase in the Government debt of a large part of that dollar.

### ***Inflation Control Aided by Plan***

The Premium Price Plan will save the Government some hundreds of millions of dollars each year. It is impossible to calculate the saving with any precision. The difference between the total money spent on these three metals with the Premium Price Plan and the total that would be spent with a uniform price for the whole supply of each high enough to cover the costs of the highest-cost increments would be several hundreds of millions. From this must be subtracted the difference in tax payments between the two situations, an amount which cannot be readily estimated with the new complicated provisions on excess profits taxes for mines. An allowance would also have to be made for the well-known fact that a substantial part of excess profits always slips away into higher wage bills or other types of expenditures. Finally, there is the additional factor that increases in prices of materials often become pyramided to some extent at later stages of production by application of customary methods of charging percentage overhead rates, machine-hour rates, or profit margins. All things considered, it is safe



Donald H. Wallace . . . "I should like to correct some common misconceptions about metal price controls."

to say that the Premium Price Plan will save the Government some hundreds of millions of dollars every year.

In the second place, if the prices of these metals were allowed to rise to the level necessary to enable production of the highest cost parts of the supply, the objective of maximum production might not be attained. Some parts of the available supply are now beginning to cost more than the present premium prices. Such very high prices would present an inducement to low grading. With the Premium Price Plan this inducement is present, if at all, only in very much lesser degree. In peace time it is a good thing to have low-grade ores worked in boom times with high prices, for this conserves the high-grade ores and makes the whole ore supply go farther. In total war, where every pound of metal may mean the difference between life and death for a man on attack or defense, low-grading must not occur. Available facilities and manpower must produce every possible pound of recovered metal.

In the third place, the Premium Price Plan includes the sale of all parts of the supply at the ceiling price. This provides a stable price which facilitates the planning of production and procurement both by the private firms in the fabricating industries and by the war agencies. It also facilitates effective operation of priority and allocation controls.

Finally, quota adjustments under the Premium Price Plan constitute a flexible instrument for adjusting mine revenues so as to enable continuous maximum production in the face of changing circumstances which occasion changes in cost—unavoidable

decline in grade of ore, wage increases, fluctuations in operations owing to changes in the manpower situation, and the like.

These advantages of the Premium Price Plan have been adequately demonstrated in the past nine months since its inception. It is simply the most common-sense way of administering prices so as to facilitate maximum production with the minimum increase in prices and in the public debt consistent therewith. Without the Premium Price Plan a substantial part of the output of these essential metals would not have been secured or it would have been secured only by large increases in prices across the board with a corresponding large and unnecessary increase in the cost to the Government and the whole community.

I should like, next, to correct some common misconceptions about price control in the field of metals and about the Premium Price Plan. Some appear to believe that price officials have paid a disproportionate amount of attention to price control of metals. We have indeed given a great deal of attention to the metals and to other basic materials but not an amount disproportionate to their importance in the war picture. Modern war equipment is made largely of metals—planes, tanks, ships, trucks, jeeps, ammunition, and the equipment to make and transport these war goods. Moreover, the prices of metals and the other basic materials obviously constitute the foundation for the whole price structure.

### ***Quotas Constantly Being Reviewed in Order to Correct any Mistakes***

It is sometimes said that quotas have been set too high to enable maximum production. We have, of course, made some mistakes as was only to be expected in the task of setting quotas for each non-ferrous mine in the country. These mistakes have been rectified when we became aware of them. We are constantly reviewing quotas in order to correct any mistakes and to revise them when changing conditions require that, as Mr. Maury will point out. However, the statement that we have set quotas too high sometimes implies, I think, the idea that we should have used a very high price—that is, low quotas—and the abnormally high profits attendant upon it as a bait to get more production. Use of the "bait theory" is plainly inconsistent with the objective of preventing unnecessary inflation of prices and of the Government debt. I'd like to explain this point at greater length because it is a common source of misunderstanding.

The Office of Price Administration has been charged by the Congress with the statutory responsibility of

preventing inflation of prices and unnecessary expenditure of public funds and of administering prices so as to assist in securing adequate production of commodities. These things are listed in the statement of purposes in the Emergency Price Control Act of 1942. This means that we must not set maximum prices at points too low to assist in securing adequate production, but that they should not be higher than necessary to enable adequate production and to be fair. If we permitted prices in excess of those which provide margins that are both fair and adequate to enable maximum output we would be derelict in our statutory duty, derelict in achieving the sound objectives of maximum production with minimum inflation. Moreover, large profit margins provide a temptation to evasion of wage controls in a short labor market and might thus prevent the most effective use of manpower and interfere with manpower controls designed to secure the best use of manpower. And, as I have pointed out earlier, abnormally large profit margins might lead to low-grading.

### ***Each Mine Must Produce Every Pound Possible***

In peace time we are accustomed to think that every mining enterprise has a right to keep its ore in the ground until the bait or price is just what it wishes, whether that be 5 cents or 35 cents. Most of you feel as I do and most people do that in a war for survival each mine must produce every pound possible. The Government does not ask you to produce for prices which are unfairly low or prices that yield revenues inadequate for maximum production. But the Government cannot pay each individual whatever he happens to want for his production. That would raise the cost of the war unduly and it would be discriminatory as between individuals.

Another common misconception is that the Premium Price Plan for copper, lead, and zinc is a curious species of price arrangement reserved solely for the delectation or annoyance of producers of these metals. Actually the Government has used the principle of setting different prices for different parts of the supply in the pricing of many other commodities. The Metals Reserve Company is purchasing some tungsten at prices substantially above the ceiling. An arrangement involving the same principle is in effect to facilitate the return flow of scrap brass and foundry products by purchasing frozen stocks of such commodities. High-cost steel producers have been permitted to charge prices above the general steel price ceilings where that was necessary to enable adequate production of essential steel items. One of the most important

basic materials, industrial alcohol, is sold at different prices, depending upon differences in cost of materials and other costs. West Coast log producers are permitted to add to the maximum price specified additions for hours worked by the camps in excess of a basic work week. These are some of the other instances in which different prices are set for different parts of the supply of a commodity.

I have said that the Premium Price Plan provides a flexible pricing device to meet changing conditions among which are wage increases. As you know, the War Labor Board, with the approval of the Director of Economic Stabilization, recently authorized wage increases in certain mines here in the West. The anti-inflation law of October 2 authorized the President to stabilize wages. The Executive order issued by the President on October 3 to implement that law provided that no increases or decreases in wage rates should be authorized unless approved by the War Labor Board. In general, where there is reason to think that a change in the price ceiling will be required by a wage increase, the wage increase must be approved by the Director of Economic Stabilization.

When wage increases are properly approved in accordance with this procedure the Quota Committee will make appropriate adjustments in mine quotas, where such adjustments are necessary in order to permit operating margins which are reasonable and adequate for maximum mine production. We recognize that there are cases where, in order to enable maximum production, properly approved wage increases must be offset in part or in whole by increases in revenue. Where such a condition is shown this will be done by appropriate adjustment of quotas. In the event that adjustment of quotas is not sufficient in some cases, it is expected that price adjustments can be made to take care of the situation. In considering the need for quota or price adjustments we must be guided by the fairness and adequacy of operating margins, as in all other cases involving adjustment in quotas. In cases where the operating margin, after giving effect to an approved increase in wage rates, is still fair and adequate for maximum output no adjustment is necessary and none can be made.

In setting or revising price ceilings in manufacturing industries the Office of Price Administration has taken into consideration the aggregate profits before taxes received by the manufacturing enterprise. As long as the dollar volume of profits, adjusted for a reasonable return on any additional investment, remains above the average of the last pre-war years, the price ceiling is fair and adequate from the standpoint of profits. This standard is applicable in manufactur-

ing industries partly because enlarged volume of operations usually results in a marked decline in unit cost. In some types of mining operations unit cost declines or remains constant with enlarged volume, but in others unit cost must inevitably rise with added output, owing to resort to higher cost ores or types of operation. The Premium Price Plan is, as I have said, fundamentally a recognition of this fact. Accordingly in making adjustments in quotas or premium prices we recognize that the aggregate profits test applied in manufacturing is in many cases not suitable. Hence the attention given to the operating margin or difference between price and out-of-pocket cash cost. The operating margin includes, of course, depletion, or amortization of the investment in ore reserves, and profits over and above this.

I think it is obvious that, although a number of other considerations are important in setting maximum prices, one always comes down to the last question of how much profit should be included. This is an important part of price control because it is impossible to hold price increases in a war situation to the minimum consistent with maximum production and fair prices without absorption of cost increases where that does not impair fair and adequate profits. From the first day of operation of the Office of Price Administration and its predecessor agencies it has been our policy to require absorption of cost increases where that was possible. There are now additional reasons why profits must be an important consideration in price regulation. The Executive order of October 3 based on the act of October 2 and other statutes contains the following provision:

"The Price Administrator in fixing, reducing, or increasing prices, shall determine price ceilings in such a manner that profits are prevented which in his judgment are unreasonable or exorbitant."

### **Profits Are Allowed**

This clause in the Executive order reflects the fact that farm price controls and wage controls will operate more effectively only if there exist also effective profit controls. This provision is, of course, to be considered as supplementary to profits taxation. Moreover, in the field of munitions and ships the Army, the Navy, and the Maritime Commission operate under statutes and policies which call for negotiation or renegotiation of contracts so as to prevent excessive profits. In fact, the war agencies in purchasing military equipment seem to follow in general a policy of making contracts with moderate profit margins with each company and on each item. If we followed a similar policy in price control in the field of basic materials we would set maxi-

mum prices mine by mine on a kind of cost-plus-a-moderate unit profit basis. Some have in fact advocated such a procedure but we have not as you know adopted it.

I think this will explain to you why we must be concerned with profits. We cannot make downward adjustments in quotas or upward adjustments in premium prices when operating margins are perfectly adequate and fair without them. By the same token, however, we are concerned to make such adjustments when operating margins would not be adequate and fair without adjustments. It is difficult to describe in general terms an adequate and fair operating margin. Clearly revenue should cover all actual cash expenses, including necessary development expense, and in most cases it should be considerably more than this. The figure must be determined by people who know mining, taking into consideration the past operating margin of the mine, any special needs incident to changes in conditions, typical margins and conditions in the same district, differences in the ordinary value of ore in the ground as between deposits, and similar relevant factors. Where a mine has different increments of output with markedly different costs the operating margin on each increment or part should be fair and adequate. In some cases this can be done most appropriately by the averaging process to which Mr. Maury will refer.

What I have said to you today,

gentlemen, really boils down to this: You have a job to do in getting out every last pound of metal. We have a job to do in assisting you to do that and in preventing unnecessary inflation of prices and of the Government debt. You can trust us to do our job as intelligently and effectively as possible and in such a way that those two objectives of maximum production and minimum inflation do not conflict.

Price cannot, of course, guarantee maximum production. All it can do is to create conditions which enable maximum production. Maximum production will occur only if producers are resolved to get it by every means at their disposal, however extraordinary or uneconomical as judged by ordinary peace-time habits. Most producers of these essential, scarce metals have gone all out in this way, but some have not.

Price regulation is unpleasant to the recipients. It benefits you in the end, as it benefits all groups in the community; but it forces you to forego in the meantime additional amounts of extraordinary war profits which you might receive in its absence. Price control is one of the whole family of war-time controls under which people in all industries and in all occupations must make sacrifices. Only by intelligent and effective design and administration of these controls, and cooperation from management, labor, and all groups in the country, can we win the war and win the peace.

## **What the Price Plan Recognizes**

By JOHN D. SUMNER

Price Executive, Zinc, Lead, Tin Branch OPA

A FULL UNDERSTANDING of the whys and wherefores of the premium price plan is essential if the plan is to operate with maximum effectiveness. Consequently I wish to comment briefly on certain points implied in Mr. Wallace's statement.

Mr. Wallace referred to the Premium Price Plan as a common-sense method of pricing metals in wartime. This point he supported by reference to the advantages to the plan in making possible the mining of high cost ores, in minimizing the inflation of prices and of the public debt, and in introducing a stable basis for private and government planning of production in the areas of metal fabrication.

I should like to approach the matter from a somewhat different angle: Every plan, including this one, has to be sized up in view of the alternatives to it. In general three lines of policy were open to O. P. A. O. P. A.

could gear a single price to the highest cost production needed. Or it could recommend that Metals Reserve Company make special deals by way of cost plus contracts in each case where the ceiling price did not suffice. Or it could establish a more flexible framework within which differences between situations and changes in situations could be taken account of.

Mr. Wallace has pointed to the inflationary dangers of a single price policy and to its threat to maximum production by way of low grading. Two other factors should not be lost track of. First, in the very nature of the case, a single price cannot be changed every other week. And yet, in certain mining areas, cost situations are constantly developing which require a price adjustment if some production is not to be lost. Second, it was considered imperative that a reasonable price assurance be given



for a period of time in the future to facilitate longer range development and exploration. Such an assurance would be extremely difficult and costly to achieve under a single price policy in which price would necessarily undergo frequent adjustments.

### **Cost Plus Contracts Bring Business Objections**

A second alternative policy is cost plus contracts in individual cases. Indeed, this policy has been followed to a limited extent in copper and its extension was considered prior to the establishment of the Premium Price Plan. By cost plus contracts I mean special contracts under which a producer receives his costs plus a stated profit per ton. Two serious objections exist to the extension of cost plus arrangements. Administratively, such a procedure, especially in the case of smaller properties, is necessarily very time consuming.

More important, however, the use of cost plus raises serious business and economic objections. It operates to take the brakes off the cost. Indeed, the manpower difficulties of the mining industry stem in part from the use of cost plus methods in other industries. It seems more in keeping with the genius of private management to provide a method under which all rises in cost are not automatically transferred to the shoulders of the government, and also, in which all economies do not automatically accrue to the benefit of government.

The Premium Price Plan necessarily recognizes costs, changes in costs, and differences in costs. But it does not in effect say to a man, forget your costs; we will pay them whatever they may be plus a cent per pound over.

### **Conditions Constantly Changing in Mining Industry**

The Premium Price Plan entails delays, and mistakes are made under it. But it does provide a framework sufficiently flexible to meet the widely different, and constantly changing, conditions of the mining industry. This it does without, on the one hand, changing the whole price throughout the country whether a fraction of total output is endangered. Nor does it, on the other hand, involve the delays and ill effects of cost plus contracts made with scores of operators of hundreds of properties all over the land.

I believe that an understanding of these factors and of those which Mr. Wallace spoke of will result in co-operation becoming whole-hearted support. And such support will substantially aid the production of metal in this country.

## **Administration of Premium Price Plan.**

By **JESSE L. MAURY**

Chief Premium Price Analyst Copper, Lead and Zinc, OPA

**MR. WALLACE HAS STATED** the general purposes and structure of the Premium Price Plan. I am going to describe how the plan is implemented and what has been done to date in its administration. We operate under the general requirement that funds disbursed by the Metals Reserve Company must be disbursed as a result of administrative decisions based on reasonable evidence. With respect to the Premium Price Plan, the responsibility for appraising the evidence and making the administrative decisions rests with the War Production Board and the Office of Price Administration, subject to the approval of the Metals Reserve Company. In order to arrive at the necessary decisions, a Committee has been formed composed of representatives from the War Production Board and the Office of Price Administration. There are three members from the War Production Board, F. H. Hayes, chairman of the committee; W. C. Page of the Zinc Branch, and C. A. Wright of the Lead Branch. There are two members from the Office of Price Administration, J. J. Beeson and myself. In addition, a representative of the Labor Division of the War Production Board, Samuel Lipkowitz, and a representative of the Legal Division of the Office of Price Administration, J. A. Spruill, participate in most of the committee meetings and advise the committee on matters having to do with their respective fields. Mr. Landon F. Strobel is executive secretary for the committee.

During the earlier months of this year the committee's work was largely taken up with the fixing of quotas on all of the mines in the country, involving the establishment of some 3,650 quotas on 1,550 mines. Of these, about 3,225 were zero quotas; that is, all production from mines to which zero quotas were assigned was entitled to receive the full premium payment of the difference between the established ceiling prices and 17 cents per pound for copper, 9½ cents for lead, and 11 cents for zinc. The remaining 400-odd quotas were set with the intention of including all of the production of the three metals which might reasonably be expected to come out at the ceiling prices. Since late spring the committee has been engaged to a great extent in the revision of quotas in order to provide for expansion of production at a number of mines, adequate development in others, and in general for changing conditions at the mines.



Jesse L. Maury, Chief Premium Price Analyst, OPA . . . "199 quotas have been revised."

The committee receives proposals for expansion of production and development programs, or requests for revisions of quotas due to other circumstances. These originate through personal visits by mine managers to the committee, through letters, or at the request of the committee. In order to standardize somewhat the type of information upon which the committee may reach its decisions, we have developed two forms designed to elicit such information, one for the Tri-State District and the other for mines outside of the Tri-State District. These forms request information for 1941 and the months of 1942 with respect to operating costs, tonnage, grades of ore, metal content of ores or concentrates produced, metal paid for at smelters, and operating revenues. From such historical information, an accurate picture of the past operating results may be obtained. In addition, the committee requests information with respect to probable changes in operation in the future, such as changes in grades of ore, costs, changes in production rate, and expected plants for development or expansion of production. With this material in hand, it is possible to develop a quantitative knowledge of the needs of the mine and to so design a quota that adequate operating margins and development funds will be available for maximum production and the development needed to main-



tain or increase that metal production.

The information obtained through these forms and personal discussions with representatives of mining companies is analyzed by individual members of the committee, who present their analyses and their recommendations to the committee. They are then discussed and decisions reached. The committee then makes its recommendations, which, if approved by officials of the War Production Board, the Office of Price Administration, and the Metals Reserve Company, establish new quotas for the mines.

### **Strain Placed on Premium Price System**

It will be no news to this group that the last six months have been very trying ones for the mining industry, particularly in the western states. Beginning in early May, and lasting until a week or so ago, the impacts of the draft, extensive construction projects, the summer weather, and a number of other factors have operated to withdraw from the western mines a great many of their most skilled workmen. As a result, we have seen declines in production which reached such alarming proportions by September that vigorous steps have now been taken to return workmen to the mines, and I am under the impression that adequate labor for metal production will be available shortly, and that already the mines are in greatly improved position for production. The effect of this shortage on operating margins and development programs has been even more marked than it has been with respect to production.

During the summer many mines fell seriously behind in their development programs or lost money to such an extent that their cash positions became dangerous, or both. While it had not been foreseen that such a strain would be put on the premium price system almost immediately after its inception, and while the contemplated purposes of the premium price plan had been primarily concerned with the compensation for extra costs involved in mining marginal ore, we recognized that the flexibility of the plan was such that it could be thrown into the breach last summer, pending the adoption of permanent remedial measures for the emergency. In many cases, therefore, we acted on a temporary basis to revise quotas in order that premium funds might be available to keep mines in operation and to bring them back to full productivity after the crisis had passed. At the same time, we continued steadily working on the primary purposes of the plan, the compensation for the extra cost of producing marginal ores and adequate development of mines.

A great many mining districts in

this country, some of glorious history, are now unfortunately in a diminishing phase. Rapid declines in grade at present rates of production are meeting with mounting costs and tending to cause diminution of production. We are working continually on problems having to do with these mines and establishing quotas such that they may continue to obtain maximum exploitation of their mineral bearing material, whether it be ore in the ordinary sense or not. We are, in addition, setting quotas in many cases so that premium payments may be earned in sufficient amount that comprehensive development programs may be undertaken to restore, if possible, ore reserve positions so that mining may be carried on at the highest pace compatible with existing or available facilities.

The premium price plan has, I think, under these very trying circumstances, proven itself sufficiently flexible to take care of the emergency. Some indication of that flexibility may be given by a summary of the work that has been done to date. Between March 1 and October 31, 199 quotas had been revised. Quotas originally established covered 92 percent of the domestic production of copper at the March rate, 89 percent of the lead production, and 88 percent of zinc production. At October 31 quotas, as revised, covered 86 percent of the copper production at the March rate, 73 percent of the lead production, and 63 percent of the zinc production.

### **Prepared to Make Adjustments**

In looking forward to the coming problems of the mining industry, the committee has carried out work along three lines. It became apparent in the late summer that substantial wage increases might be authorized by the War Labor Board in the western states. In mid-September the committee undertook to determine what the results of possible wage increases might be. Forms were sent to the larger mines of the west requesting information which would indicate the impact of a wage increase. Telegraphic inquiries were addressed to some 600 smaller mines. As the returns were received from the larger companies adjustments have been made in the case of those mines for which wage increases have already been authorized and the operating margins of which are insufficient to absorb the increase. The committee is prepared to make adjustments in the cases of a number of other mines when wage increases have been authorized, and if quota adjustments are needed by the mines under consideration. In the case of the smaller mines, some 250 answers were received to our inquiry and analysis of the returns has been completed. The

analysis indicates that a sufficient number of these smaller mines can absorb the wage increase without additional premium payments so that individual adjustments of the remainder will not be an impossible administrative burden.

Both in our routine work with respect to mines of diminishing grade and our analysis of the survey this fall, it has become apparent that there are certain instances in which quota adjustments may not be sufficient to assure maximum production. It is expected that in such cases price adjustments can be made.

### **New Rule Increases Metal Eligible for Premium Prices**

In order to place premium payments on a uniform basis for all producers, and in order to simplify and speed up the calculations of payments due, we have revised the rules under which metal eligible for premium payments is calculated. The new rule for such calculations will become effective December 1, 1942. In general, it will operate to increase somewhat the metal eligible for premium payments. In cases where such increase is disproportionate, quotas will be revised accordingly. In a few cases, it may be that the metal eligible for premium payments will be reduced, due to the unusual terms of the smelter contracts under which the ores are sold. In those cases we will consider the advisability of revising quotas accordingly.

One phase of our work remains to be discussed. In normal mining operations it is necessary not to mine ore below a grade which will cover the out-of-pocket costs of the operation. The principle of the premium price plan is that ore which would normally be mined under ceiling prices, that is for which ceiling prices are sufficient to cover costs plus a reasonable operating margin, will be paid for through the ordinary channels on the basis of ceiling prices, and that premium prices will be paid to the producers for ores which would not normally come out at ceiling prices.

Where the costs of high-grade and low-grade ores from a mine can be segregated and accounted for separately, it is possible to apply this principle with some precision. In many mines, however, the costs of high-grade and low-grade ores cannot be separated accurately, and in setting quotas for such mines we must take account of this fact and consider the average grade and average cost of the total ore coming from a mine. In many instances we have been presented with a situation in which a mine operator has a quota about equal to his commercial ore capacity, but in his mine are certain

(Continued on page 38)

# Developing Strategic Metal Production for War

*Metals Reserve Company and Defense Plant Corporation, subsidiaries of the Reconstruction Finance Corporation, have important responsibilities in mining*

By CHARLES B. HENDERSON

President, Metals Reserve Company and  
Chairman, Reconstruction Finance Corp.

**M**EMBERS of the American Mining Congress, much has happened since I met with you in October, 1941. At that time this country was at peace. In less than three months war was thrust upon us. Defense measures gave way to war, and every enterprise and every individual has been called upon to take an active part in this vital effort. Never before in the history of the United States has it been as necessary as now that all its people devote all their energy to victory, because never before has victory meant so much. A final and complete victory can be achieved only by the maintenance of a fine balance between strategic tactics and logistics.

Strategy is the planning of warfare; tactics is the execution of the plans; logistics is the supplying of everything necessary to strategy and tactics. It is, in measure, the science of supplying the right amount of men and material at the right place at the right time. With respect to those latter elements, the civilian performs an equally important part with the military, in the smooth functioning of a war machine—a war machine whose unit of energy is manpower.

The word manpower, when used in these turbulent times, conveys to most people the thought of combat of huge forces of men at the front and very rarely is considered in its greatest sense, when it relates to the huge force of men who supply the military, and without whose efforts the front-line strategy and tactics of the war machine would collapse.

The success of an army depends on its supplies, which must not only be abundant but perfect in construction. This is especially true when that army is ours, and must be the best-equipped and best-supplied army in the world. Therefore, equally as important as the finished implement of war is the man whose labor brings about the production of such an implement.

Metals Reserve Company was organized for the sole purpose of acquiring, caring, and making available to war production critical and strategic

metals and minerals needed for the implements and munitions of war. This purpose would be thwarted if the manpower necessary to make and refine these strategic metals were unavailable.

With the passing of the Selective Training and Service Act in September, 1940, the demand for war materials to be used for training, and now to be used as well for actual combat, increased substantially. Over night defense plants sprang up to produce the supplies necessary for war. When war was declared on December 8, 1941, Reconstruction Finance Corporation was fully organized for such a conflict and immediately the strategy of an active war program called for more supplies, and at the same time forced manufacturers to expand production facilities. This engaged more manpower. This expansion necessarily increased the demand for basic, strategic materials.

## **Mining Industry Must Have Skilled Workmen**

We are fortunate that our Congress, in passing the Selective Training and Service Act, was far-sighted and realized that a balance between labor and the actual combat forces must be maintained to assure success. Our President, with full realization of the problem, created the War Manpower Commission to act as an additional aid as far back as March, 1942. A list of essential activities was prepared by the War Manpower Commission and made available to Selective Service for distribution to local boards throughout the country. On that list were two specific topics, under the headings Metal Mining, and Smelting, Refining and Rolling of Metals.

On July 28 and August 27, respectively, these two, already listed as essential to the war program, were again certified by the War Manpower Commission as essential, and local boards are constantly impressed by the Selective Service System with the



Charles B. Henderson, President, Metals Reserve Company . . .  
*"we have assumed the responsibility for the administration and for the safeguarding of public funds to the fullest extent possible."*

importance of having enough miners to take out the metal and are constantly reviewing individual cases with that in mind.

From this can be seen that the War Manpower Commission and the Selective Service System are working to give to the metals industry the skilled workmen needed to carry out its indispensable function in the war program. With the help of these two agencies, therefore, we can rest assured that everything possible will be done to see that the metals industry will have the manpower to carry on the logistics of this vital war.

The Congress recognized mines and minerals as an important part of our national economy when in its plans for a national rehabilitation it singled out the mining industry as entitled to specific consideration. From the beginning the Reconstruction Finance Corporation's authority to make mining loans the primary aim of the program was to keep the mines going in order to prevent further unemployment among miners. At that time increased employment of our nation's manpower was recognized as necessary if the economic stability of the country was to be maintained.

Today the Reconstruction Finance Corporation finds itself faced with exactly the opposite problem from that which confronted it then. In both instances the Corporation's purpose was and is to maintain mining operations at the highest possible level. There is this essential difference, however: Then the question was how to keep jobs for men; now the issue is how to keep men for jobs. How serious this issue is becomes ap-

parent when the activities and extent of our organization in the metal and minerals fields are realized.

There is available a mimeographed statement relative to these activities which covers the matter in detail. However, there are certain phases of the program which are worthy of more comment.

Reconstruction Finance Corporation has had a mining loan program intended to promote the production, first, of gold, silver, and tin; and later other strategic materials. The real activity of importance to the war, however, began in the summer of 1940, when Reconstruction Finance Corporation organized its war subsidiaries, two of which were Metals Reserve Company and Defense Plant Corporation. The RFC and these two subsidiaries launched a general program for the development, production, refining, and stock-piling of the strategic and critical minerals and metals. To October 26, 1942, the over-all commitments have aggregated \$3,990,038,900. These figures do not include over six billion of commitments by Defense Plant Corporation in war activities, other than in the metals and minerals program. Our metals and minerals commitments, with minor exceptions relating to RFC mining loans, have all been made in response to the request and recommendation of the authorities charged with the national defense.

We have not assumed the initial responsibility for determining the quantity and quality of the materials needed in the general war program, nor have we duplicated any staff or effort or functions of other governmental agencies which maintain special, qualified technicians whose service can be used. We have assumed the responsibility for administration and for the safeguarding of public funds to the fullest extent possible and compatible with public interests.

The activities of Reconstruction Finance Corporation, as such, in this program, aside from providing funds for these subsidiaries, have mainly been concerned with loans to assist established enterprises in the production and refining of metals and minerals. Nearly \$200,000,000 has been devoted to this purpose and constant effort in simplifying and streamlining loan application procedure is resulting in an increasing number of mining projects being contributive to the war effort.

### **Domestic Mineral Resources Being Developed**

Bigger developments have come through the two subsidiaries I have mentioned. Defense Plant Corporation has commitments of over two billion dollars for the creation or expansion of facilities needed for augmented domestic production of minerals and metals. A substantial part relates to the \$600,000,000 loan program and has tripled the production in domestic bauxite. Plant capacity provided by Defense Plant Corporation, coupled with production of the raw materials stimulated by Metals Reserve, all the activities will increase our chrome production over 38 times that of 1941. Defense Plant commitments for chrome have been \$16,077,000. For the production of copper, lead, and zinc Defense Plant has made commitments of nearly \$72,000,000. For iron and steel nearly \$800,000,000. For magnesium over \$370,000,000. For manganese and ferromanganese nearly \$7,250,000; and for nine other metals, excepting tin, about \$72,000,000.

The Government's tin smelter, erected by Defense Plant Corporation at a cost of over \$6,000,000, is operated by Metals Reserve and is capable of being expanded to a ca-

capacity sufficient to refine all the tin ore available.

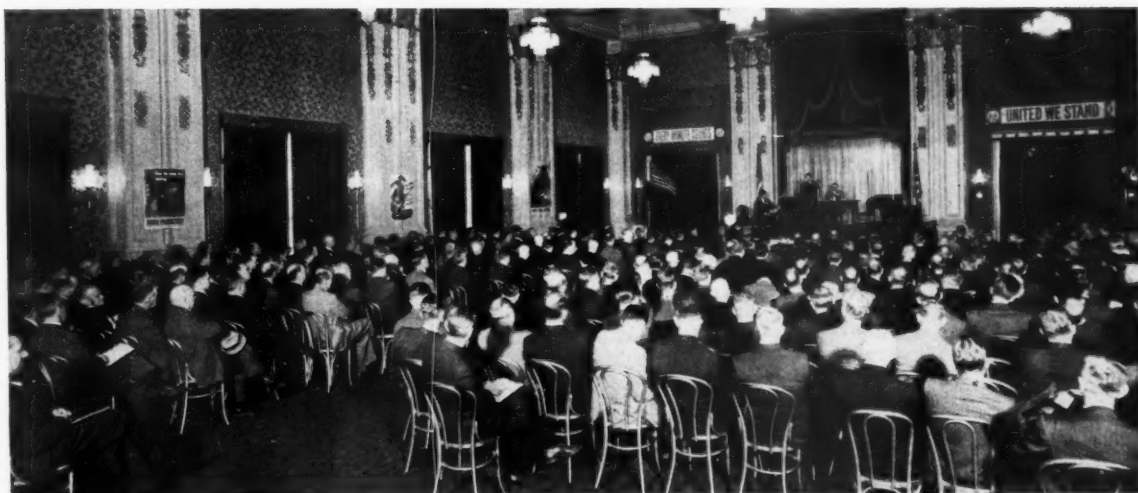
The Metals Reserve Company has aggregate commitments, exclusive of foreign purchases, of over a billion eight hundred million dollars. It is in this field that the sharpest contact will add stimulation of domestic production.

The premium purchase program is well on its way to stimulate production of copper, lead, and zinc from 2,500 mines in 27 states. Metals Reserve through contracts have stimulated manganese production 10 times the peak of production. It has entered into more than 140 domestic contracts for high-grade ore; 17 for delivery of 10,000 tons of ore, and 128 for less than 10,000 tons, and it has liberalized the usual practice respecting minimum grades to encourage the utmost production. Aside from certain large developments in Montana and Alaska, Metals Reserve has contracted to purchase over 480,000 tons of chrome ore from domestic producers under 67 contracts. Five contracts call for 10,000 tons or more and 62 contracts for less than 10,000 tons. Metals Reserve, in addition to contracts for large tonnages of tungsten concentrates has put into effect a plan reaching small producers, with the result that domestic tungsten production has more than doubled in the last year.

With respect to other metals and minerals, the purchasing program of Metals Reserve Company is encouraging the small producer, if able only to deliver one truckload, to do their part in the war program. This company has at the present time 20 engineers in the field at strategic points throughout the mining area to facilitate and expedite technical processes involved in this purchase program and in establishing stockpiles.

Metals Reserve Company's own or-

(Continued on page 38)



Monday afternoon session . . . developing strategic metal production and discussion



# Miscellaneous Metals and Minerals Production

*Quicksilver production virtually equals domestic requirements*

**T**O ADHERE LITERALLY to the subject of the discussion this morning—The Problems of Metal Production—would cover a rather limited field so far as problems handled by the Miscellaneous Minerals Division of the War Production Board are concerned.

Our problems on metal production revolve principally around quicksilver. Owing to the erratic nature in which quicksilver ordinarily occurs in the earth's crust, together with the characteristic shallowness of deposits, the known reserves in the ground are a very decided question mark.

We do know, however, that we are and have been for over two years, drawing from them at a terrific rate, unprecedented in the history of quicksilver mining, except possibly for a few years back in the very early days of "bonanza" production.

The rise in price above previous average levels has resulted in almost tripling previous average production figures, and has resulted in domestic production virtually equalling requirements.

## **Mercury Producers Industry Advisory Committee**

However, essential needs are continuing to rise, and we are faced with the probability of a decrease in production owing to depletion of sizable producers as soon as 1943.

Manpower shortages have seriously affected production in a few districts, but in the main, development work has been the principal phase of quicksilver mining that has suffered especially from this shortage.

A Mercury Producers Industry Advisory Committee was organized about two months ago and the first meeting was held in Washington on October 5. At this time the demand-supply picture was carefully reviewed, and the consensus of the entire group pointed to the urgent need of undertaking a vigorous exploration and development program promptly in order to be assured of adequate supplies for several years.

For some time the Geological Survey and the Bureau of Mines have been carrying on exploration and development work connected with quick-

silver, indicating numerous favorable areas on which to concentrate. These efforts are now being further stimulated, and the active help of Metals Reserve Company also brought in to accelerate the program.

Fortunately, expansion of output in Mexico and Canada, together with a smaller program in Peru, has and will continue to augment greatly the supplies of quicksilver produced in the United States.

In order to be doubly confident of our supply situation for as long as five years hence, we feel that the domestic exploration and development work referred to above is highly essential, in addition to the added production we are now getting from other Western Hemisphere sources.

Aside from mercury, we also have jurisdiction over gold and silver, all the platinum metals, radium, uranium, selenium, tellurium, and the rare earths which are produced from monazite sand. Each of these has its own peculiar problems, but by and large they are not serious so far as production for essential needs is concerned.

We are also responsible for production of lithium ores, demand for which has greatly increased recently for war and essential uses. We will be a little short on lithium ores until a large project now being constructed at Kings Mountain, N. C., comes into production next spring, but it is hoped that we may draw upon some foreign sources to tide us over until then.

To touch briefly on a few of the nonmetals handled in the Division, I will merely enumerate some of them: natural and synthetic sapphire, jewel bearings, industrial diamonds, diamond dies, quartz crystal, abrasives, feldspar, talc, kyanite, topaz, vermiculite, diatomaceous earth and most of the clay minerals other than common fire clay.

Of these, our principal raw material supply problems revolve around quartz crystal and corundum. Corundum was formerly mined in Georgia and in Canada. Production from the first source ceased about the turn of the century and from Canada in 1920. Since then our entire supply has come from South Africa. The rapid expansion of industrial output in 1941



**By RICHARD J. LUND**

Director, Miscellaneous Minerals Division  
War Production Board

indicated a severe shortage of this material toward the end of the year. Our first step, therefore, was to push as rapidly as possible for an increase in African output. This has been accomplished after approximately six months and it now appears that, aside from shipping problems, the supply from that source will be sufficient to take care of the necessary amounts of this material which are currently being allocated to essential consumers in the grinding wheel and optical industries. Nevertheless, we are at the moment investigating possibilities of further supply from the Canadian deposits in southeastern Ontario and from our own deposits at Corundum Hill, N. C. Other occurrences are being investigated as soon as they are reported. To date we are not optimistic over domestic production of corundum, but feel that Canada could supply reasonable amounts if necessary.

## **Domestic Sources of Quartz Crystal**

I wish to take this occasion particularly to bring to your attention our very keen interest in pushing an exploration and development program for production of quartz crystal in the United States. World supplies, as you know, have originated almost entirely in Brazil, but it appears that there are real possibilities of obtaining sizable amounts from this country. There is an urgent need of developing this domestic output. We know of a number of localities, such as Arkansas, North Carolina and New York, where good shaped crystals have been found in the past, and we are initiating a program to cover these areas, as well as other promising districts, as soon as possible. Quartz finds its principal war use in controlling frequency in radio communications, for which purpose only very pure crystals can be used. They must be parts of single  
(Continued on page 38)



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## Right in Our Own Backyard!

*Sure, there's a pot of gold at the end of the rainbow.  
And just over the horizon are "acres of diamonds". But  
untapped mineral resources right in our own backyard?  
Yes, and from them the mining industry is filling the war-  
born demands for more and more metal for the Americas!*

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Deprived of many former foreign sources of minerals, the mining industry is called upon for larger production than ever before attempted . . . and this despite shortages of labor and supplies. To meet this demand, the mining industry of both Americas is adopting new ways and expanding existing facilities for treating larger tonnages of low-grade ores, sub-ores and waste-products.

How is this being done?

Giant strides forward are being made by the installation of new flotation capacity for treating low-grade base metal ores. Noteworthy example is the increase in capacity at the Morenci mill where new equipment, including Fagergren Flotation Machines, will more than double the estimated capacity of the original mill. Older mills, too, have expanded output through improved metallurgy and the installation of better equipment. Typical is the modernization and expansion program of the Bagdad Copper Corporation mill where output of flotation concentrates will be increased many fold.

Highly important also are the gains being made by the addition of Heavy-Media Separation Processes to pre-concentrate the feed to flotation and thereby increase the output of existing mills, or to make possible the economic

treatment of material hitherto considered too low-grade for concentration. Already, plants using Heavy-Media Separation Processes are being operated or being built to treat substantial tonnages of Lead-Zinc, Zinc, Tin, Garnet, Iron and Magnesite ores.

Due to the refractory nature of many domestic ores and the limited technical data available on their treatment, much research work has been necessary. In this work the Cyanamid Ore Dressing Laboratory has cooperated with the mining industry in concentrating such minerals as Illmenite, Rutile, Zircon, Garnierite, Topaz, Beryl, Brucite, Helvite, Celestite, Spodumene and Cobalt-Nickel Sulphides. This cooperative work has resulted in the construction of new concentrators — some of which are already in operation.

In the economic application of Cyanamid Flotation Reagents and Fagergren Flotation Machines; in the addition of Heavy-Media Separation to present flow schemes or its use to produce marketable concentrates; in the technical work necessary to develop new or improved techniques for treating previously unused native minerals, the facilities and services of the Cyanamid Ore Dressing Laboratory and Cyanamid Field Engineers are at the command of the mining industry.

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# Supplying Metals for Alloy Steels

*Minerals needed for ferro alloys are constantly being stockpiled*

By MILES K. SMITH

Chief, Ferro-Alloys Branch, Steel Division  
War Production Board

I AM INDEED glad to be here. Though I am not a mining man and can contribute little to the solution of your mining problems, I might be able to tell you something of the overall picture with respect to important metals you produce.

Before going into that, I'd like to bring you up-to-date on our organization in Washington. You know that the branches handling tungsten, chromium, manganese, and nickel were recently combined into one ferroalloys branch.

The purpose of this combination was to place responsibility for supply, distribution and conservation all in one place. Then all the problems, bearing on these metals could be attacked with more concentrated effort. The idea is basically sound, for it simplifies production problems, and the problem of conservation.

Then that idea spread even farther, just one week ago today, with the announcement of the controlled materials plan, there was another consolidation in the War Production Board, setting up a Steel Division, which includes the former Steel Branch and the former Ferroalloys Branch. Under this new arrangement all the metals going into alloy steel will be handled by the same group.

Now, for this matter of conservation. It, together with plans to help you increase production, is the very heart of our efforts to provide sufficient supplies of the alloying metals. As you know, the technology of alloy steel making, is the science of combining different proportions of alloys with steel. Of the several important alloying metals, some are more scarce than others. It would be possible, for a shortage of one of these to impose a limit on the amount of vital alloy steel produced. We cannot permit this. The answer, is to arrange the alloy program like the famous "One Hoss Shay"—which was built so perfectly that it ran without a hitch until the last moment—and in its last moment of life, it disintegrated completely, all at once. As a matter of fact, that is the basic principle of a very sound engineering philosophy. To engineer your product to do exactly

the job you want, not better; but precisely good enough to get the job done.

We are doing the same thing with our alloys. There is, of course, considerable leeway in combining alloys with steel to get the performance properties required. We can vary the amount of chromium and nickel, change the tungsten content, or change the molybdenum. By doing this we can ease up on the most critically short alloys. By exercising careful control over the use of each metal, we can avoid shortages that would limit alloy steel production.

Let me make clear one point on this "One Hoss Shay" story. We don't expect to have our alloy "One Hoss Shay" collapse for some time to come. We now think, despite certain shortages in some of the metals, that we will be able to handle the alloys so that alloy steel production will not be seriously limited.

## *Conservation is Important*

As an example of the change in steel specification, bringing about this actual conservation, the national emergency steels are already easing the strain on the more critical alloys. These national emergency specifications have been drawn up by cooperative action between the WPB and the American Iron and Steel Institute. The armed services and industry have been very cooperative in switching to these new specifications in a large number of applications.

So much for conservation—the other side of meeting these demands is the contribution of greater production of these materials. This has in no small way relieved the critical situation in many places and will continue to make this country far superior to our enemies in the quantities available for steel making purposes. We are greatly indebted to you for your efforts in increasing production to its present status.

The problems of increasing this production, beyond its present levels must be considered with respect to several factors. The present status of materials necessary to produce increased

quantities is not quite as favorable as one might hope. Probably the most determining factor, in any project, is the relative need for the quantity of steel and other materials necessary to the project, compared to the resulting quantities of ore to be produced. This problem is one that is very difficult but must be solved before proceeding with the project. The second question is "will the demands for this alloy continue with the ever changing demands of alloy steel requirements?" With these two questions answered in the affirmative, the balance of the procedure is merely routine.

To get back to the materials, and their relative positions, we might discuss for a moment some of the materials handled in our division, in a general way. We might start with manganese ore. The supply of this commodity, previous to the war, was dependent entirely upon shipping. The continued supply of this commodity still depends to a large extent upon shipping, augmented by domestic production. Up to now the shipping situation has been decidedly favorable and we have been able to meet demands and set aside a sizable reserve. The same is true of chrome, although certain grades of ore, are not in as favorable a position, as others. Cobalt is in the same category since a large percentage of this material comes from abroad. However, stocks of ore are not as plentiful as we would desire. We might include tungsten in this same group, since we have not met requirements by domestic production alone, and must depend on imports for some of our supply. We have obtained a stockpile of this material but are hopeful to see these reserves continue to grow. Vanadium is another material of which we have not been able to accumulate sufficiently large stocks. Molybdenum is in a somewhat different category. The bulk of production is in this country, and only a small amount is imported. The supply of this material is not sufficient to meet existing demands and further conservation will be necessary if production cannot be increased.

This is the status of most of the materials covered by the Ferroalloy Section, that pertain to the manufacture of steel. There are several other metals handled by the section that are less commonly used but have a very important position in the war program. Among these are beryllium and tantalum. The principal sources of both of these elements are outside the United States. They are a by-product of other types of mining and requirements are considerably smaller than the materials previously mentioned, but they are nevertheless important. We are desirous of increasing domestic production of these ma-

*(Continued on page 38)*



# Metal Mining and the Selective Service

By LT. COLONEL H. ARNOLD RICH

Utah Director, Selective Service System

*Manning tables will be used in orderly fashion*



Col. H. Arnold Rich, Utah Director, Selective Service System . . . "the Selective Service is not a policy-making agency."

I AM DEEPLY appreciative of the honor which you have conferred upon me in asking that I discuss with you today the relationship of Selective Service to the mining and smelting industry. I regret as deeply as you the inability of General Hershey to be present on this occasion. He has asked me to extend to you his greetings and sincere regret that incidents over which he has no control have made his attendance impossible. It is always a ticklish proposition for a lieutenant colonel to attempt to take over any of the functions of a major general, regardless of their nature. General Hershey is present in spirit today, as your problems are of very great moment to him right now.

When I say that your problems are of great moment to him, I mean that the products of mining are of such critical importance that everyone who is in any way responsible for our war effort is deeply concerned.

But you have not asked me to come here and remind you of something that you know better than I, nor to pay you compliments. Nor do you desire that I spend time alibiing the Selective Service Administration from all responsibility for the shortage of manpower that exists in your industry. You and I know the situation

and you want to know what Selective Service can and will do to help. Also you are interested in any suggestions that I may have to offer as to future policies—immediate and in the months to come.

There are a few things upon which we can probably agree at the outset:

1. In spite of the men who have been released from the Army, you are still short on experienced personnel.
2. You have in your employ some individuals who would not ordinarily be deferred as necessary men in industry, but who are now being deferred by reason of recent directives from the director of Selective Service.
3. Some program should be initiated which will be sufficiently comprehensive to see that your manpower problems are adequately solved.
4. The solution should comprehend the release of men from your industry to the armed forces, who would ordinarily go there and for whom replacements can be had, at the earliest possible date.

## **Civilian and Nonessential Activities Must Curtail**

In the first place let me state that Selective Service is not a policy making agency. The number and kind of men required for the armed forces is determined by the War and Navy Departments. The number and kind of individuals required for industry is determined by the War Manpower Commission and other agencies of the Government. I will state, however, that there is no intention on the part of any one in a position of responsibility of seeing your industry be shorthanded in operating personnel. Neither is it contemplated that the armed forces shall be inadequate for victory. The President has made that very clear. Recent directives with reference to deferments in the mining industry and the President's statement as to the size of our armed forces by the end of 1943 have left no room for doubt. Civilian and non-essential activities must curtail or may even cease to exist but not the production of raw materials for war purposes or the procurement of manpower for the fighting forces.

Your industry is but one of many war industries which must have replacements and personnel for expan-

sion. Some of these other activities may obtain substantial relief from the opposite sex but this is not so true of you.

Where will these millions for the armed forces and war industry be obtained?

The armed forces must have men of certain types and ages to make an effective fighting machine. It must not be assumed, as so many people think, that they may all be unskilled, to be trained from the ground up. That is true only to a very limited extent. Men who are already skilled are just as necessary and even more vital to the armed forces as in industry. The enemy will not wait for us to train airplane mechanics, tool makers, machinists, electricians and miners. In mechanized and air-borne armies practically every man must possess or acquire a specialized skill. You note that miners are included in the list. The United States Government needs in the Army for important tasks connected with its operations *right now* more skilled miners than there are individuals employed in that civilian occupation in Utah, Idaho, Colorado and Arizona combined. You will therefore more fully appreciate the value which the armed forces place upon your job when they will release some of those miners to you at this time.

A very recent survey of our manpower shows that after the needs of our armed forces are provided for, we will still have approximately sixty million men and available women as workers for industry and agriculture. It is also estimated that an additional eighteen million women can be used for an "all out" mobilization. This seems to be an adequate pool for activities essential to be carried on in this global war.

It is readjustment that is essential. And in this readjustment we must not only contemplate shift of personnel but also increased performance by those already on the job, through elimination of absenteeism and other abuses.

We have made only a start—and a very late one—on this vital problem. Perhaps the individuals involved are still waiting to see whether compulsion is necessary and what the method will be. We still have millions of men in non-essential industry and occupying positions that can be filled by women. And yet at the same time your industry and other vital war activities are hamstrung and languish for badly needed help. These individuals still hesitate and falter before making the move from positions and surroundings that are pleasant and advantageous. They remind one of a Texas steer that stands with feet braced on the edge of the chute before jumping into the disinfectant bath. Maybe they are waiting for the persuader to be applied.

It has been hoped that patriotic appeal would be sufficient to produce the needed readjustment. We have even tried to lure them over with tenders of greater deferments by offering to place them in Class III-B. Ordinarily an appeal of this type to men with families would result in action. The result has not been sufficient. You and other war industries are still short.

Leaders in Washington have proposed a National Service Act as the needed persuader. By this means it is felt that not only new trainees can be obtained but that those who are already skilled in crafts needed in vital activities can be sent back where they are badly needed and where they can render greater service.

It is not my purpose to express an opinion on the merits or demerits of such proposed legislation. That is a question for others to decide in the light of its effect upon the national picture as a whole. In the absence of such legislation I can state, however, that there is a method of producing results which has already been tried and found to be effectual.

### ***Occupational Deferments Are the Only Ones Considered***

Shortly after the outbreak of war the armed forces found themselves short of medical and dental officers. It was also found that some communities would be left without adequate service unless there was some regulating agency to distribute and redistribute these professional men. Accordingly the Surgeon General set up within the medical and dental professions an agency known as Procurement and Assignment to determine who should be considered as available for service in the armed forces, and to see that all communities had necessary service. If a doctor or dentist failed to make application for a commission after that agency had considered his case and declared him to be available, he was certified to his Selective Service Board with instructions to disregard his dependency and consider him for induction. It was very effectual in producing results.

This might seem very harsh and arbitrary, but the situation is such as to require drastic action. And in this connection you will bear in mind that we are fighting enemies who know no dependency deferments. The same is true of England. Occupational deferments are the only ones considered—and then only in the interest of the war effort.

There is no doubt of the fact that such individuals could be deprived of their right to certain classifications where they fail to comply with an invitation from the U. S. Employment Service or some similar agency to accept a position where they are more urgently needed. I am sure it would

not be necessary to more than suggest the desirability of a change in position to any man of military age. The result would be immediate.

I am not saying that this is what should be done. But I am saying very emphatically and most positively that something must be done without delay and that what I have suggested is something that might be considered.

### ***Millions Needed for War Industry***

You will note that I state as one of the things upon which we should agree, that any proper solution of the manpower problem should comprehend the release of men from your industry to the armed forces. I am, of course, referring to young men of the age groups who would ordinarily go into military service. At the present time such individuals are single, have collateral dependents only, or have a wife and no children. They are 18 to 45 years of age. Any permanent solution which does not comprehend the ultimate release of these men for military duty will be inadequate.

Prior to the enactment of the Selective Service law the Under Secretary of War had already commenced the expansion of war industry. This became more rapid in 1940, and by the end of that year war industries were searching everywhere for individuals who could become quickly proficient in various skills. Naturally this attracted young men to the shipyards, airplane factories, other places of employment, and the various vocational schools and apprenticeships. This was not only condoned but actually encouraged because of the vital need of war goods to take care of lend-lease commitments and the demands of our expanding forces. Our Army expansion program at that time was such that this manpower could then be spared. However, with the outbreak of war the situation became entirely different. Millions were required for the armed forces and additional millions were needed for more rapid expansion of war industry. The impact was inevitable, and with added months the situation has become acute.

Calls for men to go into the armed forces have been so heavy that the Selective Service Administration has found it necessary to stop the further influx of such individuals to war industries, and to make some arrangement for the orderly withdrawal of those of military age who had been temporarily permitted to engage in that activity.

Until recently the various states have been without an adequate plan to guide them in this withdrawal. The result has been that most employers have asked for deferment of everyone, and have made very feeble attempts at a real replacement program. On the other hand some local boards with

heavy calls to fill have withdrawn manpower from those industries regardless of the result. It was undoubtedly the inevitable result of hurried action to accomplish Herculean objectives in a few short months.

I am happy to advise you that we are now engaged in reforming our lines along sounder principles. Each war industry is now taking a comprehensive inventory of its manpower so that it and Selective Service will know definitely the number and type of individuals who should be released and replaced for service in the armed forces. These individuals are then classified according to skills, giving consideration to their qualifications and the time necessary to secure or to train replacements. This is particularly true of those persons engaged in management, engineering, planning, superintendents, occupations requiring essential skills and those engaged in the training of others. Representatives of the industry and of Selective Service then sit down and agree upon a plan for the orderly withdrawal of those registrants after careful analysis of the job classifications. The period of release will then very largely be determined on the basis of the period of time required to train a replacement. This procedure will provide the basis for a review of the use of manpower by the employer, his present and future requirements, and the rate and order of replacement for men liable for military service. This will entirely eliminate the haphazard individual calling of such men from war industries by various local boards and by the several states. Industry will know in advance the maximum number of its employees who will be lost each month and the names and classifications of those who will thus be withdrawn.

### ***Manning Tables for a Replacement Program***

During the past several weeks this program has been under way and rapid progress has already been made, particularly in the large industries on the coast where hundreds of thousands of men are employed. To make it really effectual unrestrained voluntary enlistments should stop, and the "pirating" of labor from war industries by other war industries should cease. Order must be brought out of the chaos which has existed, and I feel confident that these manning tables which will guide Selective Service in its future activities will be a big step in producing that result.

When, in the future, the situation in your industry becomes sufficiently stabilized that a replacement program may be undertaken, you may be assured that these manning tables will be applied, and that men will be withdrawn only after the program has

been thoroughly discussed with your representatives, and in an orderly fashion.

At the present time you are being helped over the hump with the deferment of all men in your industry. These deferments are applying to all personnel whether skilled or unskilled and whether now employed or contracted to be employed. I have been told that it is helping. I am sure you will appreciate the fact that this part of the program comprehends some dangers to the national morale, and to mining in particular. I feel at liberty, therefore, to urge upon you the desirability of using the utmost wisdom, judgment, and common sense in its application. While it is all-embracing, I am sure you will appreciate that you should yourselves limit its application to skilled employees and not to those who can be spared or replaced. At the earliest possible time you should build up your personnel from groups and categories not subject to military service. Like all good and desirable things this right is subject to abuse and could very easily lead to serious trouble. A considerable number of young men without dependents, of military age, without skill or background, will seek this activity as a means of evading service. In fact it is already being done. We are daily receiving requests for deferment of many 20 to 25-year-old men without prior mining experience. We are granting those requests as a temporary help in your industry. Some employers may capitalize upon that impulse as an easy way of solving their employment problems. Please remember that this is fraught with real peril. I have seen it in action and speak from recent experience. Those individuals may cause more harm than good. The presence of manifest draft evaders in any organization will be resented by honest labor in your industry and by the parents of others who patriotically take their places in the fighting forces.

I pass this suggestion and advice to you only for the purpose of having you proceed with your program with your eyes open, fully aware of its unpleasant possibilities. I am confident that you have the foresight and wisdom to see that there is no unfavorable reaction to your injury. I, therefore, again urge you to diligently seek the return to your employment of the skilled men who have left for greener fields and the recruitment of young men not subject to service at the present time, rather than to take inexperienced young men for training, excepting to help out in the present emergency.

As I mentally take a cross-section of this audience, I observe that you not only represent the management and direction of a great and vital war industry, but also the fathers of boys who are today in the fighting forces

of our nation. You have a double interest in the prosecution and outcome of this titanic struggle. Deeper still you are and represent the leadership in American industrial thought. Your responsibility is great. Imbued with lofty, patriotic and unselfish ideals your contribution to the proper solution of our complex industrial problems can be very far reaching and most important.

In these days when we are thrilled with the accomplishments of our military and naval leaders and the countless deeds of heroism of our millions in the armed forces, let us be ever mindful that our governmental and industrial leaders at home create the conditions and formulate the policies which make them glad to fight to preserve and perpetuate the type of life which is created at home.

## || Premium Price

*(Continued from page 31)*

marginal ores which could be mined were the price for the average output from the mine to be higher. In such cases, if we lowered his quota to below the commercial ore at his usual rate and not to produce the low-grade ores which we are seeking. When we set a quota under these circumstances, we do so with the understanding that the operator will in effect take some of the profit from his commercial ores and apply it to his marginal ores. Under these circumstances, the quota is so set that with such mixing he will obtain an operating margin for the average of his commercial and marginal ores such that it will be possible for him to obtain maximum exploitation of his marginal ores. Many operators have already undertaken such a program, and it is our hope that many will do so, since we are convinced that in order to win this war we must obtain every lost pound of metal which can be run from the mines of this country.

## || Developing Strategies

*(Continued from page 33)*

ganization is a very small one, particularly when considered in relation to the extent of its activities and the volume of its business. Indirectly, however, many hundreds of the best-qualified men in the mining industry are helping us carry out our work. It has in many cases been found necessary or advisable, for instance, that mining properties or plants be operated by Metals Reserve Company or for Metal Reserve Company's account. We early realized, however, that it would be impossible for any Government agency to create an organization of its own which could conduct such operations as promptly

and effectively as the regular mining companies. From the start, therefore, Metals Reserve has avoided trying to do its own operating, and instead has farmed out this work amongst the mining companies best qualified to handle it, and it is the latter who, as agents of Metals Reserve, have the conduct of this work in hand. In this way a great many of our important mining groups are contributing the skill and talents of their organization. And in this way, although Metals Reserve's own staff continues small, many good men, in one way or another, are on our roster.

It has always been our belief that Government should neither compete with nor parallel the work of industry but should instead enlist the help of industry wherever industry is better qualified to act.

## || Miscellaneous Metals

*(Continued from page 34)*

crystals, no less than about  $\frac{1}{2}$  lb. in weight per piece, contain at least 30 percent material by volume free of optical twinning, bubbles, flaws, needles, cracks, veils, etc. Inasmuch as large amounts of quartz are encountered in mine operations in the United States, I appeal to all of you to keep your eyes open for clear quartz that might be useful for this purpose, and to let us know promptly if you find any or hear of any prospective localities where it may be found.

## || Ferro Alloy Metals

*(Continued from page 35)*

terials and they should be recovered wherever they are mined.

In summarizing, I might state that we have a great deal more of most of these materials than our enemies and with the continued efforts of all mining men, will have still more. Lack of labor, lack of materials, are all hardships that go hand in hand with an all-out war effort, but we will have to bear these hardships in order to accomplish our purpose.

## || War Conference

*(Continued from page 25)*

ous problems that are uppermost in our minds today. I would like to close this meeting by asking you to give them a rising vote of thanks for making this convention so interesting. I want to thank each of you for the attention you have given, and I am sure that you have gained from coming here to partake in these meetings."

The two-day conference closed with a buffet supper in the Lafayette Ballroom of the Hotel Utah.



# Coal Conservation By Selective Mining and Reject Recovery

**U**NDER THE PRESSURE of war production, many ways are being found to eliminate waste of materials and, as a specific part of this general program, coal consumers are being urged to adopt conservation methods which will result in saving thousands of tons of fuel during the coming months. But coal conservation can also be practiced by the producer and before long it may become necessary for operators to examine the possibilities for salvaging some of the fuel values left in the gob underground or in the refuse sent to the slate dumps on the surface. However, in planning any recovery of present rejects, we have to keep in mind that the "load everything" technique of 1917-18 is out; the burden of transportation from producer to consumer is too heavy to permit avoidable shipment of waste, and this burden must be lightened at the source by eliminating, as far as practicable, all removable ash from the prepared product.

## Seam Characteristics and Underground Separation

A problem involving these considerations has been solved by Republic Steel Corporation in Indianola mine,

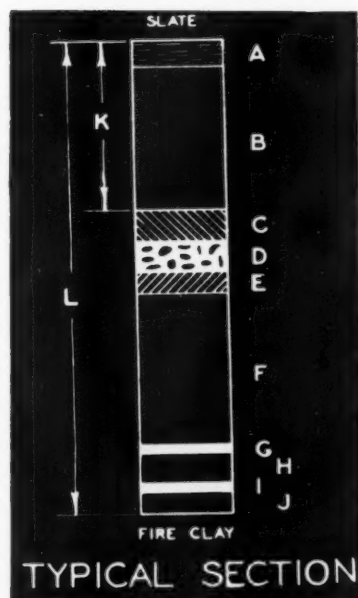


Figure 1

## An account of the methods used by Republic Steel Corporation at Indianola Mine

By E. B. WINNING

Manager, Northern Coal Mines  
Republic Steel Corporation, Uniontown, Pa.

in western Pennsylvania, located 15 miles east of Pittsburgh and operating primarily to produce metallurgical coal. The seam is the thick Freeport, which has a total height of approximately 8 ft.; the mining height is about 7 ft., leaving some coal of inferior quality for roof and bottom. As shown in Figure 1, the mining seam is divided into three sections; bottom bench, a top bench, and a center section consisting of a 6-in. strata of bone with bands of "blackjack" above and below it, ranging from 4 to 6 in. thick. The top and bottom benches are high-grade metallurgical coals shown as B and F in Figure 1 but, for metallurgical uses, the center section should not be mixed with the remainder of the seam.

When the mine was worked with hand loading the impurities were gobbled underground and removed at the tippie picking table, with the re-

ject going to the slate dump. In 1939, however, mechanical loaders were installed, which of course called for a complete revision of the preparation practices, and after some experimentation a system of selective mining was evolved by cutting out the middle partings, Sec. C, D, and E, in Fig. 1; by cuts marked 1 and 2, in Fig. 2, and loading the top and bottom sections of the seam as metallurgical coal. The machine cuttings, including top cut (marked 4, Fig. 2), were loaded as a separate product and shipped as steam coal, but the high ash content reduced the combustion efficiency and also had the effect of increasing the transportation cost per ton of fuel value. In order to improve this condition, a mechanical cleaning plant for the steam coal was installed about a year ago as a final step in the coal reclamation process. The metallurgical coal and the

## AVERAGE WEIGHTED ANALYSES OF 12 CHANNEL SAMPLES

	Thick- ness in inches	Percent		
		Ash	Sul.	Phos.
A—Top coal (unmined).....	9.56	14.05	2.51	.0066
B—Upper bench .....	26.56	7.43	1.35	.0259
C—Upper blackjack .....	.....	.....	.....	.....
D—Bone coal .....	.....	.....	.....	.....
E—Lower blackjack .....	.....	.....	.....	.....
F—Lower bench .....	33.47	5.54	0.60	.0169
G—Upper binder	8.52	27.50	1.64	.0130
H—Bottom coal				
I—Lower binder				
J—Bottom coal				
K—Slate to top of kerf.....	36.52	.....	.....	.....
L—Total height of seam.....	92.96	.....	.....	.....

Combina- tions	Thick.	Ash	Sul.	Phos.
A B F H..	78.11	9.62	1.20	.0182
A B F....	69.59	7.43	1.15	.0189
B F H....	68.55	9.00	1.02	.0199
B F .....	60.03	6.38	0.93	.0209

steam coal must be delivered separately to the tippie, but this is a comparatively simple matter. The mine is operated by a shaft equipped with a skip hoist of 6-ton capacity. The skip is loaded underground by a rotary dump; the mine cars are of two types—6-ton and 3-ton—and this

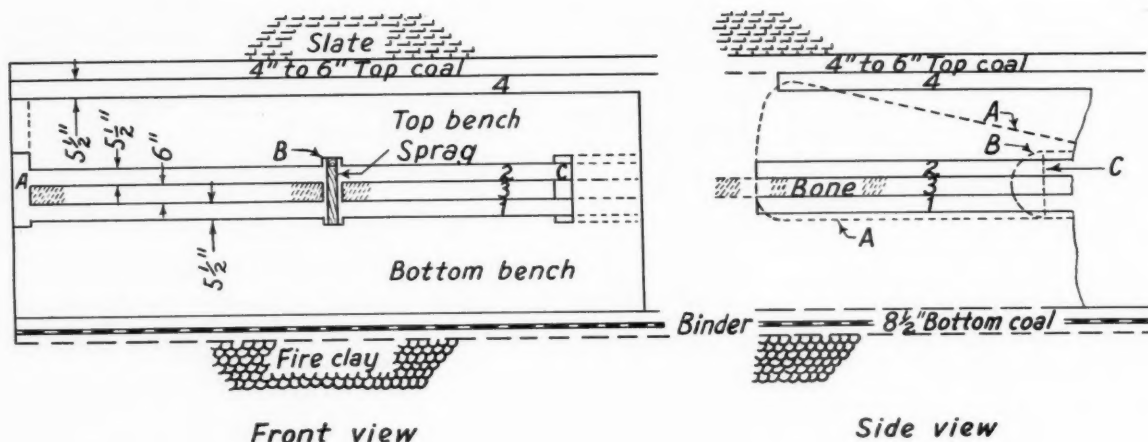


Fig. 2. Standard method of cutting and shearing

even ratio between the skip and mine car capacity makes it possible to dump both grades of coal as they come in the trips, without car shifting at the shaft bottom. At the top of the hoist there is a flygate in the skip chute, operated on signal from below, to send the metallurgical coal directly to the main tippie coking coal bin, or to divert the steam coal to the steam-coal bin supplying the cleaning plant, as described later in this article.

### Mechanical Loading and Selective Mining

The mining method is the block system, as shown in Figure 3. Entries are 13 ft. wide and rooms 18 ft. wide; the rooms are on 80-ft. centers, with crosscuts on 64-ft. centers, turned at 60° angles to facilitate mechanical loading. A series of six rooms is driven to the panel limit, leaving a 240-ft. barrier next to the gob area of the preceding panel; after the panel limit has been reached by the six rooms the pillars are brought back immediately and the barrier is developed by the regular method of rooms and crosscuts. The pillars are mined open-end, leaving a small stump for protection at the inby corner; roof falls occur at frequent intervals on the retreat and by keeping a systematic break line across the panel little trouble is experienced from roof weight and a high percentage of coal recovery is made.

Cutting, shearing, and mechanical loading is with track-mounted machines. The loaders discharge directly into mine cars; these are solid-end steel construction for rotary dumping, the newer type cars are 6-ton capacity but some older ones of 3-ton capacity are still in use. The mine track is of 60-lb. rail on wood ties in the main and secondary haul-

age, 40-lb. rail on steel ties is in the active workings.

The method of selective mining uses the following described sequence, starting at the beginning of the cycle after a place has been cleaned up, timbered, and the track extended. By referring to Figure 2, the cutting

machine shear cuts A, B, and C. A is along left rib, B is in center for sprag, and C is so placed in right side as to leave a 24-in. x 40-in. x 48-in. triangular support for top bench. The cutting machine then makes the lower horizontal cut directly under the bone, shown as 1. The second

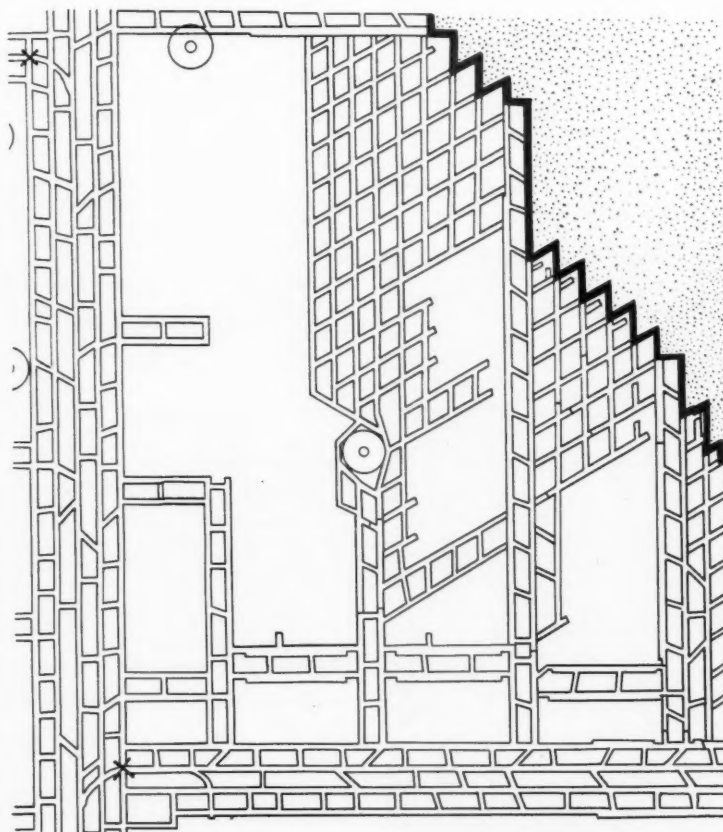


Fig. 3. Block system for mining rooms and pillars

horizontal cut, directly above the bone, is then made, shown as 2. A sprag is placed to support the top bench, shown at B. The third horizontal cut is then made at the top of the seam, shown at 4. This completes the cutting cycle.

The loading machine enters the place and loads the cuttings and the bone into mine cars, picking up the cuttings from the floor, and also raising the loading head so as to clean out the center kerf. Following this, the top and bottom sections of the seam are shot and loaded.

Approved safety practices are used in the underground operations. Water is sprayed on the cutting bars, supplied by a tank car which is coupled to the machine. The mine is well ventilated and rock-dusting is kept up along the entries and rooms close to the working faces. The coal is shot with permissible explosives; manufactured "dummies" of clay with some mixed-in sand are purchased from a near-by commercial plant, which furnishes these to several mines in this field. The top coal when left in place makes a satisfactory roof, but if the top coal comes down the overlying strata must be supported by posts and crossbars; structural-steel beams are used for crossbars on the long-life haulways.

#### ***Cleaning Plant Employs Wet and Dry Methods***

The cleaning plant is a combination of wet and dry methods and has a capacity of 100 tons per hour of 1½-

### **BRIEF HISTORICAL REVIEW OF INDIANOLA**

Indianola was opened about 25 years ago and in its comparatively young life has had an interesting history. It was one of the first mines in Western Pennsylvania, if not the first, to adopt rock dusting machines—back in the early 1920's—and before that was among the pioneers in installing modern underground haulage ways. In 1917 its main line track was constructed with heavy steel rail, ballasted road bed and creosoted mine ties; most of these ties, by the way, are still in place after 25 years of service. In the experimental days of coal mine mechanization, starting about 1925, a number of mechanical methods were tried, using almost every kind of loading equipment then known—chain conveyors, shaking conveyors, loading machines, and pit car loaders. Modified longwall was included with movable steel jacks.

All this, however, occurred before the property was acquired in 1936 by its present owners, Republic Steel Corporation. By that time, the early models of mechanized equipment had become obsolete, and it is worthy of mention that most of them are now serving our country against the Axis in the form of guns, tanks, shells and whatever else is manufactured from salvaged material. In 1939 a new program of modern mechanization was started, with track-mounted machines; these proved satisfactory, and additional units have been added until the mine is now producing about 80 percent of its output with mechanical loading.

in. x 0 bony cuttings. The cuttings as hoisted are dumped on a bar screen with approximately 3-in. openings and the oversize goes into a separate bin. It is taken from there by a reciprocating slow-speed feeder, hand picked to remove the lump bone and rock; the balance passes through a crusher and is returned to the cuttings bin for rescreening. The undersize of this 3-in. bar screen is fed from a bin to a 5-ft. x 10-ft. double-

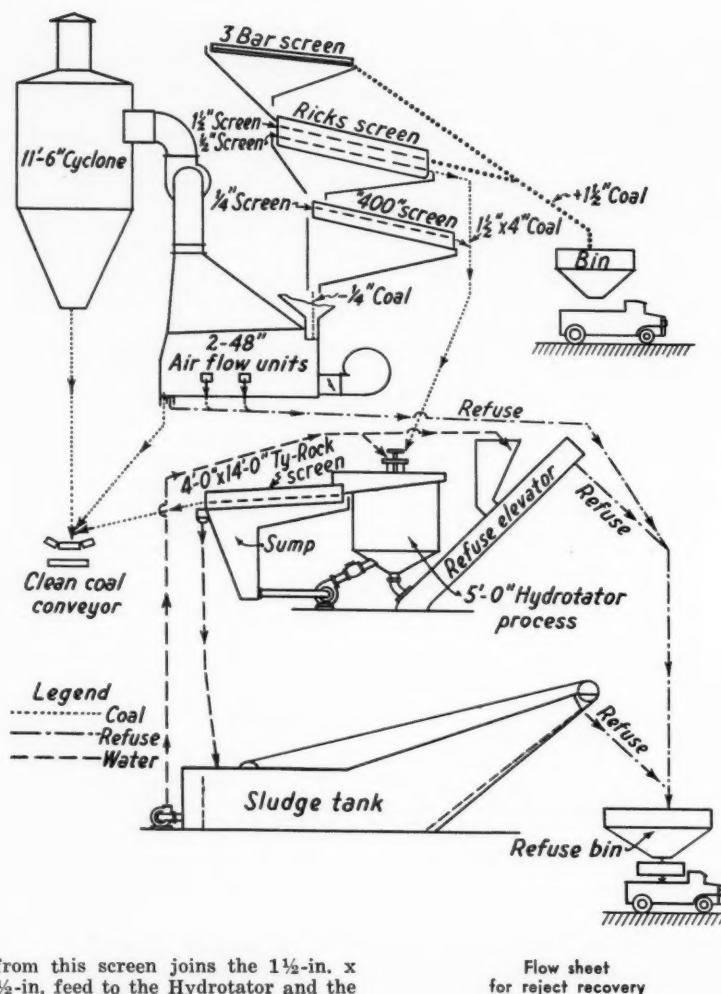
deck Ricks screen. The upper deck has 1½-in. square openings and the lower deck ½-in. square openings. The oversize from the 1½-in. deck is crushed to 1½-in. size and elevated to the cuttings bin for rescreening.

The 1½-in. x ½-in. material from the Ricks screen goes to a Hydrotator Process wet-washing unit. The ½-in. x 0 through product is fed to a 4 x 8-ft. Tyler "400" screen dressed with a ¼-in. Tyrod cloth. The oversize



Loading machine cleans cuttings from kerf





from this screen joins the 1½-in. x ½-in. feed to the Hydrotator and the ¼-in. undersize goes to two 4-ft. Stump Air-Flow cleaning units equipped with an 11-ft.-6-in. Cyclone dust collector. Clean coal products from the Hydrotator and the Air-Flows are carried on a belt conveyor and loaded into railroad cars. Two belt conveyors are provided so that the wet and dry clean coal may, if desired, be loaded separately.

We have made a number of experiments in the cleaning plant and at the present time are wasting the ¾-in. minus sizes and wet washing the 1½-in. x ½-in. sizes. This serves as a very satisfactory stoker fuel, averaging approximately 12 percent ash; the average analyses of raw coal varies from 19 to 21 percent ash. We are recovering approximately 58 percent of the cuttings and bone delivered to the surface.

### Wet Cleaning

A 5-ft. Hydrotator unit was selected for this purpose and its equipment includes a 4-ft. x 14-ft. dewatering screen, a 6-in. circulating pump

driven by a 25-hp. motor, and a refuse conveyor driven through a gear reducer by a 7½-hp. motor. The circulating pump is provided with a vari-pitch pulley drive so that the pump circulation may be controlled without the use of a throttle valve.

On the floor below the washing units is a sludge recovery tank. The conveyor consists of 18-in. flights spaced every 24 in. and operating at a speed of 20 ft. per min.; this conveyor is driven through a gear reducer by a 5-hp. motor. A 4-in. pump, operated by a 5-hp. motor through a V-belt drive, returns the overflow water to the Hydrotator. This water is divided, a constant volume being used to wash in the dry feed, while the balance is introduced through the automatic refuse control. Make-up water is added through a spray onto the dewatering screen and to the sludge tank overflow to the pump sump. No water or sludge escapes the sludge tank; the sludge joins the refuse from the wet and dry cleaning units and is trucked to the waste dump.

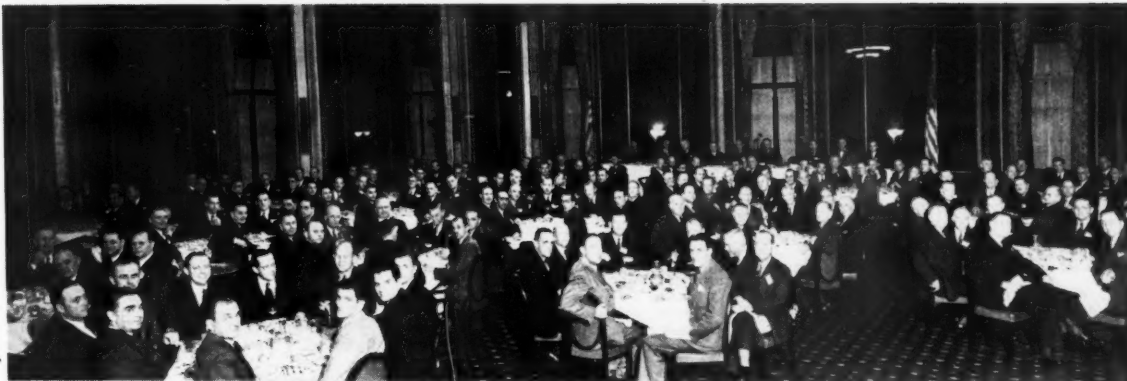
### Dry Cleaning

Two Stump Air-Flow cleaning units are employed in the cleaning of the coal produced by the 4 x 8-ft. vibrator dressed with ¼-in. Tyrod cloth. The air units are each 4 x 8-ft. with fixed, inclined decks and feeders driven by 2-hp. motors. The flutter valves are separately driven by a 5-hp. motor. The air supply fan is a single inlet blower driven through a V-belt drive by a 40-hp. motor. The suction fan is driven through a V-belt drive by a 40-hp. motor.

The air from the two cleaning units is delivered through large-volume hoods by the exhaust fan to a 11 ft., 6-in. Cyclone dust collector; the air is exhausted through the roof to the atmosphere, while the dust is bagged and shipped to our foundries.

Cuttings are loaded before face is shot down





Dinner at the William Penn Hotel closed the two-day Annual Conference of the Coal Division

## Annual Conference of the Coal Division, American Mining Congress

### *Progress in the Various Phases of Operating Technique Made in the First Year of War is Discussed*

**M**ORE THAN 200 operators and manufacturers met at the 8th Annual Conference of the Coal Division, which was held in the William Penn Hotel, Pittsburgh, on December 1. It was a record attendance, with representatives of the Northern and Southern Appalachian fields, the Central States and Pennsylvania Anthracite present. The conference is the occasion for the annual assembly of the committees who are studying technical and operating problems of coal mining and their reports. These reports which all had the underlying theme of wartime production were presented and discussed. In opening the conference at 10 o'clock Tuesday morning, Julian D. Conover, secretary, expressed this thought:

"I do not need to say to an audience like this that the coal industry is being called on for a perfectly tremendous job. We are being asked to increase our production from 400 million to 600 million tons of bituminous coal and a more or less proportionate increase in anthracite. Merely the increase in the production of coal is more than twice the entire production of iron ore in the whole Lake Superior region, which this year is reaching 92 million tons, the greatest in the entire history of those immense iron ore ranges. Our coal increase in production is 5 billion bushels—nearly twice the weight of all the grain crops in the country, 65 times the weight of the cotton crop.

"Not only are we asked to undertake this job, but we are asked to do it at a time when key men are being taken into the Army or are leaving to take higher paid work in the munition plants or war construction projects, and we are constantly having to train new men. We are being asked to do it while our equipment is wearing out at a greatly accelerated rate and we are having great difficulty in getting replacements and repair parts,

to say nothing of the new machinery needed to increase production.

"It is true that our partners, the manufacturers, have been cooperating in every possible way and have given wonderful service. It is true that some of our good friends in Washington have recognized the importance of the industry and have been extremely helpful in getting the materials that we need. But this situation is getting tighter all the time, and there are some mighty tough times ahead. We must be prepared to convince a good many people in Washington that coal is essential and that we must have the men and the tools and the transportation facilities if the operators and the manufacturers are going to continue to do the kind of job that we have to do if we are going to win this war. Thus far, coal is the one absolutely vital and essential commodity for industrial and civilian life, on which no priorities or preference ratings are needed and which is not being rationed.

"We know that all these problems and a lot of others are keeping every man in this room extremely busy these days, and frequently a good part of the nights. We don't seem to have any time of our own any more, but we also know that if we are going to meet these problems, if we are going to increase production as we are being asked to do, we must keep on improving our mining practice; we must be doing a better job all the time; we must compare notes with the other fellow and get the benefit of his experience. That is why we have come together here again today."

Harry M. Moses, president, H. C. Frick Coke Co., chairman of the Coal Division, welcomed the members to Pittsburgh and spoke of the valuable service which the committees are giv-

ing to the coal industry, saying in part:

"The large attendance here this morning is proof of what I have long felt about the Coal Division of the American Mining Congress—that it is a valuable asset to the industry. Otherwise, so many of you would not have taken the time to come. I have studied with a good deal of interest throughout the last year the work of the Coal Division committees and have read with interest the all-inclusive reports that have been prepared and published. I find in them, evidence that the best minds in the coal industry are cooperating to solve major problems that have confronted us for years. As chairman of the Division I should like to compliment those gentlemen who have served on the committees and to tell them that the work they are doing is giving great value to the industry.

"You gentlemen who have spent your lives in and around the coal mines need no urging to patriotism. All of us know, and America generally looking at your record of performance also knows, that you have only one urge today, which is to do your utmost to successfully terminate this war at the earliest possible date."

Following these opening remarks, each committee then went into a separate session for the remainder of the morning. At these sessions they reviewed the reports on which they have been working during the past year and prepared extracts for presentation to the general conference which convened at 1:30 in the afternoon. A brief summary of these presentations and discussions is given on the following pages of this issue and the complete reports will appear each

### **Dinner Speakers Stress Need of Equipment and Transportation**

A large gathering assembled for the annual dinner in the Urban room. Harry M. Moses was toastmaster and reversed conventional procedure by introducing the audience to the distinguished guests, saying: "I wish to present to those who occupy the speakers' table the men of America who in my opinion are contributing to the winning of this war as much as anyone else in our great government's structure; the men who produce the coal that furnishes the power for manufacturing, transportation, and the many other needs of our critical war program."

John W. Haddock, vice president, Sullivan Machinery Co., chairman of the Manufacturers Division, American Mining Congress, gave a comprehensive talk on the war materials situation as affecting the mining industry:

"All of us know that mines cannot operate without machinery, equipment, parts and supplies. To make those requires materials; nearly all of such materials are vital and there simply isn't enough for all demands. As our guest here in uniform will be quite ready to testify, there are not enough of the vital materials to satisfy the Army and Navy. Now when in this emergency, the Army and the Navy must necessarily accept less than they need, it follows that the rest of the country must also accept less. So the question is not whether you will get what you want but how much less you will get.

"It is the desire and intention of the men in Washington who have control of the situation, to give you what you need to get your job done, but not a pound more. The difficulty lies in accurately assessing the quantity of materials required, and we now face a situation which is much different from that which we have faced up to this time. It is not a matter of gauging the principle involved, which is that the mines should be kept running; it is a matter of determining, analyzing, assessing and measuring as accurately as possible what it actually will take to keep the mines running. The controls in the past have been too flexible and it is right and proper that Washington should tighten up the system. If they succeed in doing what they are trying to do and what I hope they will do, those controls are going to be tightened to a point where nearly every dollar's worth of output will be scheduled and planned in advance; the material will either be provided or not provided, depending upon their analysis of the need.

"My sole excuse for speaking here tonight is to urge you, not on behalf of the manufacturers, but for your own self-protection and as a matter of fair play, to analyze and anticipate your requirements, and give information promptly through whatever channel you are requested to use, so that your needs can be measured in advance. Ask your advocates in Washington to tell your story but remember that the story they can tell is only as good as the facts you give them. There are times when one man's voice can hardly be heard, and because of your knowledge and because of the importance of the operations which you control, I

think you should be prepared to amplify the voice of the Mining Branch so that they can be heard by the men higher up who make the final decisions.

"Supplies and equipment are a major problem which can only be solved with your aid and assistance, and I am saying this to the mining men here, not the manufacturers. Please bear in mind that manufacturers are middlemen; all we do is fabricate raw material but if we don't secure it, we can't fabricate it. Our purpose is to serve you, and we can only do so if we are able to get the material which has to be provided to us by the Mining Branch, and the ability of the Mining Branch to get that material is dependent upon the information and aid and assistance which you give them."

The guest of honor was Lt. Col. Dawes E. Brisbine, executive, Rail Division, Office of the Chief of Transportation, S.O.S. His address, "The Coal Industry and the War Program," was a most interesting resume of the transportation problems as affecting the entire country and coal mining in particular, and extracts from his address are presented below:

"The coal industry occupies a place of highest importance in the war program. You provide a commodity that



**Lt. Col. Dawes E. Brisbine, Rail Division, Office of the Chief of Transportation, Service of Supply.**

is indispensable to victory. To explore the varied uses of coal in the war effort could well be the subject of a full evening's discussion. Certainly, I could sit silent, and listen with real profit, while any one of you led in such a discussion.

"Providing coal, for industrial, domestic or military purposes, involves many problems. The most important of these are the mining of the coal, and the transportation of it. Naturally, it is the latter in which the Army Transportation Corps has its greatest interest. As the big picture comes more clearly into focus, the importance of production of war supplies and of transportation requirements are more intimately understood by all of us. Our armies must be equipped, clothed and fed and all of these things, including the armies themselves, must be moved with utmost speed to all fighting fronts of this global war. The

problems of wartime transportation are sufficient to challenge the ablest and boldest; but the transportation agencies of America and the Army Transportation Corps under the brilliant leadership of Major General Charles P. Gross, the Chief of Transportation, are meeting that challenge with singular success.

"The coal industry has many problems, both in the trade and in production. It would be absurd for me to attempt dealing with them in the face of your hard-earned knowledge, and my own abysmal ignorance of the subject, but this is a discussion on your place in the war program and there are some thoughts I'd like to pass on to you for what they are worth. I'm sure that these thoughts have already occurred to most of you, but they will bear repeating.

"Impress upon your sales people, and through them the consumers, the greatest care in the use of coal cars. Carelessness in building fires under cars, or the careless use of crow bars and picks in unloading frozen coal results in bad order cars and time lost in their repair. These cars are critical units and every day they are out of commission is an aid to the enemy. The same unfortunate result obtains with every day a car stands under load unnecessarily. Despite your present efforts, open top cars still spend too much time in storage or waiting for loads. You, better than anyone, know the implications of this problem, and how best it can be solved.

"Perhaps one of your mines, with an arbitrary limit of cars, finds itself with its quota loaded with a type or size of coal for which you have no immediate sale. This, of course, is a trade problem, but the thought occurs to me that the railroads are constantly helping each other in every possible way. In the present crisis the coal producer must not allow his neighboring competitor to fall down. Balance the types and sizes of coal among you so that he can get his particular loads moved promptly. Make the best use possible of the cars that are available. You may prefer a 70-ton hopper when only a 50-ton is available. But use it if you possibly can. Get it loaded and rolling. Remember that one of the most important needs for coal is for steel—and steel also moves in gondolas.

"Through your sales organization, get the public to convert to coal burning equipment, and keep these new customers by giving them good quality coal. This is the opportunity many of you have been waiting for. The better the coal the more energy it generates. Just because the demand is so great don't let your standard of quality be sacrificed, as that is two-edged. The poorer the quality, the more coal will have to be consumed—hence a greater burden on transportation.

"When the full story of this war is written, it is my humble opinion that among the most intriguing chapters will be those dealing with transportation—whether it be on the German blitzkrieg across the low lands; or on the greatest armada of all time that made the North African campaign possible; or on the steady, uninterrupted flow of men, munitions and supplies for our Army and Navy and our Allies, over the long haul roads of the American continent. Each chapter will present an accomplishment new to history.

"Each and every one of us who adds one more day of line-haul use to a single freight car contributes to victory. His efforts will hasten the day when democracy shall emerge triumphant over the powers of greed, intolerance and oppression."





# Coal Division Reports

## The Committees Report to the Annual Conference

### COMMITTEE ON HAULAGE ROADS

R. V. CLAY, *Chairman*

During the past year the committee has been conducting a study on service haulage tracks for mobile mechanical loaders, with a view toward recommending construction practices and to determine what labor and material costs could be expected for various mining systems. Data on actual mining operations, secured from a number of coal companies, indicated that there was a possible source of labor cost saving through the use of better track material and through the use of pre-fabricated track material—in other words, that some of the work customarily done underground, such as rail cutting, bending, connections, etc., could be done at less cost by the surface shops or by the manufacturers.

**Pre-Fabricated Track Material**—A preliminary report showing three typical mining systems was presented in the September MINING CONGRESS JOURNAL; taking these three systems as a basis, a further study was made to show the labor cost savings which could be made through the use of certain types of pre-fabricated track material, and reports were submitted as follows:

J. B. Haskell—Room Mining with Pillar Recovery.

J. R. Ulrich—Room Mining without Pillar Recovery.

J. H. Siebert — Block System of Mining.

Each of the above reports presents cost figures for four classes of all-steel track construction as shown below; these were tentatively accepted by the committee, but certain changes and corrections are to be made before publication.

**Class 1**—Track with stock material, using steel ties, random length rails, purchased frogs and switches, but with all necessary rail bending and cutting done underground.

**Class 2**—Track with rails pre-cut and pre-fabricated, using steel ties, completely manufactured turnouts, all curved rails pre-bent, by purchase or at the surface shop, and all straight rails purchased to predetermined lengths.

**Class 3**—Track with semi-fabricated material, using steel ties, pre-fabricated turnouts, straight rails with special riveted joints cut to pre-

### *A Summary of the Studies and Reports which were presented to the Annual Conference of the Coal Division*

By G. B. SOUTHWARD

Mechanization Engineer  
American Mining Congress

determined lengths and pre-curved rails with special riveted joints.

**Class 4**—Track with completely fabricated material, using completely pre-fabricated turnouts known as "sectional turnouts" and all track of a pre-fabricated type with ties and joints riveted in place.

**Mine Tie Study**—C. C. Hagenbuch and A. R. Joyce submitted a report, which was accepted by the committee, discussing the use and recovery of steel ties and also wood-steel ties.

### COMMITTEE ON POWER

C. C. BALLARD, *Chairman*

Studies on several phases of the application of power to coal mining are being made, with special reference to wiring systems and power distribution for mechanical mining. As the use of machines has increased and as mines have become completely mechanized, new power practices, together with new devices which were unknown a few years ago, are now coming into standard use and revised power specifications are needed to keep up with the mechanization trend.

**Wiring for Conveyor Mining**—A complete report on this subject prepared by a subcommittee under W. F. Roberts, chairman, was published in MINING CONGRESS JOURNAL and reprints were sent to a large list of coal operators and manufacturers. The report covers specifications for distribution and connection boxes, sectional trailing cables, ground wires, with sketches and diagrams for wiring between the entry and the face for all machines used in a conveyor mining operation.

**A. C. Power Underground**—A study on the use and distribution of A. C. power has been started covering line equipment and installation methods for high and low voltage. A subcommittee under the chairmanship of D.

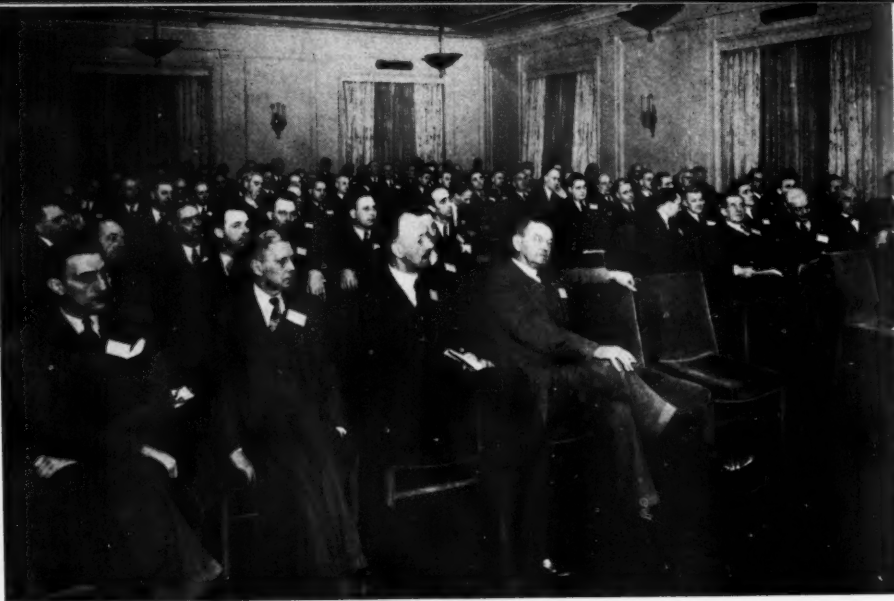
E. Renshaw will report on high voltage transmission from the transformer to the sub-station, and another subcommittee, J. H. Simpson, chairman, will cover low voltage transmission from the sub-station to the face machines. Otis G. Stewart described an A. C. operated mine using A. C. power for all face machines and outlined certain basic specifications to be observed in this type of installation.

**Color Standardization for Wire Terminals**—A subcommittee with J. H. Sanford as chairman, has been appointed to recommend color standards for wire terminal installations on electrical devices used underground, such as controllers, junction boxes, connection boxes, etc. Paul M. Barlow explained that the purpose is to provide positive polarity identification; there is at present a great need for uniformity as accidents have resulted from the fact that different manufacturing companies now use different color schemes for their terminals.

### COMMITTEE ON MECHANICAL LOADING

S. M. CASSIDY, *Chairman*

Supervision for mobile loading is a rather complex subject and the study staff organization has revealed that there are a great many factors which have to be taken into account. The purpose of the committee, therefore, is not to recommend a standard organization plan but as stated in the first paragraph of their report, "the committee wishes to point out that its intent is not to tell the industry exactly how all mines should be organized, but to point out organizational practices which seem to be generally satisfactory. Modification of these practices are made necessary by the capabilities and personalities of the key men involved and by the



A year's work and study of problems in the bituminous and anthracite mines were discussed

conditions and plan of mining of the particular mine."

During the past year, the committee has reviewed a number of organization charts used by different mining companies, covering large and small producers, single and multiple shift operation, and as a result of these reviews have divided their report into three parts—Outline of Supervisory Problems, Tabulated Summary of Supervisory Recommendations, and Organization Charts.

**Outline of Supervisory Problems**—The following reports presented by the committee members were reviewed and accepted with certain recommendations for clarification and to eliminate duplication.

**S. M. Cassidy and H. A. Treadwell**—General Problems of Supervision, outlining various points which affect the type of organization and the efficiency of the supervisory work.

**W. B. Jamison**—Supervision of Maintenance, indicating how an official staff can best function to prevent overlapping of authority and secure the best results.

**E. H. Johnson**—Inside Supervision, with particular reference to the duties and the divisions of authority between the sub-officials for the different operations.

**G. B. Bracket**—Outside Supervision, including shopmen, tippie force, etc.

**J. A. Younkins**—Safety Supervision, recommending methods for correlating authority between the safety and the operating departments.

**Summary of Supervisory Recommendations**—Based on the above reports, the committee proposes to prepare a tabulation in which the duties and authority of each of the supervisory officials will be presented in a condensed and easily understandable form. In considering the question of "authority," it will be kept in mind that the duties of a mine foreman or

mine manager are prescribed by law to some degree in all coal producing states.

**Organization Charts**—It is of course impossible to design a supervisory plan which would be universally adaptable, but the committee will prepare two basic organization charts covering five general types of operation.

#### CONVEYOR COMMITTEE

**T. F. MCCARTHY, Chairman**

A study on underground belt conveyors for gathering service and for main line haulage, which will be based on a correlation of records and experiences taken from actual operations, is being conducted by a subcommittee under the chairmanship of **Carel Robinson**. A preliminary report was submitted in the November MINING CONGRESS JOURNAL, presenting sketches showing ten typical conveyor installations, including data on the belt width, length, construction, speed and capacity. This was accepted by the main committee as a progress report, with the recommendation that the study be continued and include a compilation of records on belt performances and causes of belt failure, together with data on seam heights, roof characteristics and mining conditions. In the final report, specifications are to be submitted on methods of installation, including details to be observed in belt maintenance and operation. It was also decided that the final report should develop load factors under different methods of loading and include ways to prevent wear and prolong the life of belts with particular reference to existing operating systems and mining conditions.

**Belt Installations**—At the meeting, a number of sketches taken from the preliminary report were shown on lantern slides to illustrate the belt installations used in various mining systems.

**R. S. Bigelow** described an eight-room multiple conveyor operation with shakers discharging onto the belt; a four-room operation; a three-room operation and a two-room operation; also an entry driving installation.

**E. H. Jenks** described an eight-room chain conveyor system discharging onto a 2,200 ft. belt and a shuttle car system in which the shuttles discharge into elevating conveyors which load onto the belt.

#### COMMITTEE ON SAFETY

**L. C. CAMPBELL, Chairman**

A recent announcement was made in MINING CONGRESS JOURNAL of the organization of the Coal Division Committee on Safety, which is designed to bring together all the units of the coal industry in the interest of promoting safety and efficiency. Preliminary sectional meetings had been held during the past few months in Pittsburgh, Charleston and Chicago. These were attended by a total of about 50 men—operators and representatives of Federal and State inspection departments—who agreed that such a committee, by acting as a clearing house on accident prevention methods, could serve an extremely useful purpose.

The committee as a whole at their meeting on December 1 discussed many phases of their proposed activities, and the following five subjects were selected for the first studies and reports: (1) Haulage Accidents, (2) Rock Dusting, (3) Safety Education, (4) Standard Safety Rules, and (5) Explosion Causes and Prevention.

It was decided that through special subcommittees appointed to cover the above subjects, through the other committees of the Coal Division and through contacts with operating companies, all available information on these phases of accident prevention would be gathered, compiled and presented to the industry. A more detailed report on the purposes and procedure of the Safety Committee will be presented in the near future.

#### COMMITTEE ON STREAM CLARIFICATION

**J. W. WOOMER, Chairman**

This committee was organized about two years ago for the purpose of presenting to the coal industry authoritative data on various phases of the effect of mine water drainage into streams, with particular reference to determining what methods of alleviation were practicable or necessary. The reports already submitted have been confined to bituminous mining districts, but in order to cover the problems of the entire coal industry, an anthracite subcommittee was recently organized consisting of three anthracite engineers: **H. H. Otto**, chairman, **C. D. Rubert** and **W. C.**

Muelhof. At the Pittsburgh meeting, Mr. Otto submitted the following brief discussion on a special problem which is now being studied in eastern Pennsylvania.

**Anthracite Problems**—There is a movement in eastern Pennsylvania, originating particularly from the City of Philadelphia, asking for stream clarification and complete stoppage of stream contamination. Due to the large population living on the Delaware and Susquehanna watersheds, the solution of the problem is very complicated as it involves not only mine waters and silt but also industrial wastes and sewage, plus the sewage disposal of all large towns and cities in eastern Pennsylvania.

The first major step in this study was begun in the latter part of 1941 by a joint committee of anthracite operators, State Department of Mines and State Health Department, who made an investigation on the elimination of coal solids now getting into the Schuylkill River. This report was completed during the late summer and submitted to Dr. A. H. Stewart, Secretary of Health of the state, and is being carefully studied by the state authorities before release. Other studies will in all probability be made at a later date.

It is worth mentioning that in this area one of the principal sources of stream contamination is the sewage from a large number of towns and cities and, as acid destroys sewage bacteria, it is probable that the acid mine water has a beneficial effect.

#### COMMITTEE ON ROOF ACTION

FRANK G. SMITH, *Chairman*

Two problems in roof support are now being studied—Mine Roof Sealing and Roof Breaks in Pillar Recovery; both of these subjects have a major interest to the coal industry.

**Mine Roof Sealing**—A principal cause of slate falls in entries is top rock deterioration, which may result from moisture absorption, oxidation, temperature changes. Experiments have demonstrated that sealing the roof by some type of applied coating to preserve its original condition has promise of success in preventing falls, but these experiments have also shown that before sealing is attempted, investigations should be made on the chemical composition of the rock, its structure, etc., to indicate what type of preservative will be effective.

The committee is now undertaking such a study and in cooperation with several mining companies will make examinations and tests at a number of mines. This study will include laboratory examinations, by the U. S. Bureau of Mines and State Geological Departments, of samples of roof rock, and the first step in the committee procedure has been to formulate uniform methods for taking the roof

samples and also for making the laboratory determinations.

Dr. Paul H. Price outlined a recommended standard method for rock sampling and a data sheet for recording pertinent information on conditions affecting the roof action. He pointed out that the sample should consist of the complete section of the roof which is actually involved in the falls, and if the roof varies materially in composition, each section should be sampled separately and properly labeled. A one-half gallon tin can will hold sufficient quantity for the laboratory tests; the can should be tightly sealed and forwarded at once to the laboratory.

Dr. H. P. Greenwald has collaborated with Dr. Price in setting up a standard method for the laboratory determinations so that examinations and analyses will be conducted along exactly similar lines. In this way it will be possible to correlate the results and findings on samples collected in different parts of the country and analyzed in different laboratories. The same procedure of standard sampling and analysis will be followed during the application of roof coatings.

#### COMMITTEE ON VENTILATION

W. E. HOUSMAN, *Chairman*

The subject of mine ventilation has many phases. The committee, which was recently organized, selected the following two subjects for their first studies and plans were made for preparing and completing the reports:

1. Ventilation Survey Methods.
2. Coal Dust Removal from Mine Air.

(a) Investigation of methods for spraying at point of dust origin.

(b) Investigation of the various wetting agents.

(c) Collection of all available data relative to the above.

**Ventilation Survey Methods**—A preliminary report was presented by Raymond Mancha, pointing out the inaccuracies in anemometer readings customarily obtained by an uncalibrated instrument held in the hand of the observer and moved back and forth across the entry, and listed the following sources of error which would affect the precision of the air volume calculation:

1. Errors resulting from one position reading.
2. Errors resulting from improperly timed traverse rate.
3. Errors resulting from holding the instrument close to the body throughout the traverse in higher than average air velocities.
4. Errors resulting from changing the flow pattern past the measuring plane during the time of traverse by continuously changing the observer's body location.

5. Errors resulting from neglecting the anemometer calibration.

He suggested ways in which errors resulting from these sources can be eliminated and also outlined methods for making pressure surveys by means of altimeters; his recommendation was referred to the committee for their subsequent review and upon their acceptance will be published as an approved report.

#### Coal Dust Removal from Mine Air

—D. H. Davis presented a brief resume of the problems encountered in water spraying and stressed the necessity for careful investigations to determine the proper locations for the sprays at the dust sources in cutting, loading and conveying. Water consumption, particularly where excessive moisture is a detriment to screening or air cleaning, is also a matter for study, and the committee plans to assemble data, from operating companies, on spraying practices and results, both with and without wetting agents.

#### COMMITTEE ON SURFACE PREPARATION

T. W. GUY, *Chairman*

Two subjects, both of which are of great importance to the coal industry, were proposed for future study—the possibility of simplifying tipple screening by reducing the number of sizes prepared, and an investigation into the use of substitutes for certain critical materials customarily used in screen manufacture.

#### Simplification of Screened Sizes

It was recommended, by a motion of the committee, that "the coal industry give consideration to the maximum simplification of sizes and combinations of sizes for the use of the market in order to (1) increase coal production by the elimination of lost time due to screen changes, etc., (2) reduce the number of screen plates and equipment required and used, (3) reduce the tonnage of unconsigning sizes from day to day and thereby effect a greater turnover in use of railroad equipment, and (4) to simplify the price structure and the labor involved in keeping records, etc." In view of the fact that the adoption of this recommendation would require the agreement and cooperation of the entire industry, the question as to the next procedure will be further considered by the committee.

**Substitute Materials**—C. P. Proctor was appointed chairman of a subcommittee to collect all available data on this subject, and he advised that the war requirements would undoubtedly restrict the use of certain alloys for screens and plates. Some experiments are now being made with conveyor bottoms of concrete, glazed tiles or even glass, and the committee will investigate these experiments and report on their practicability.





Loading stoker coal which has been treated to reduce dust

# The Dustless Treatment

## of Coals With Materials Other Than Oil

By RALPH A. SHERMAN  
Supervisor

GEORGE W. LAND  
Research Engineer, Fuels Division,  
Battelle Memorial Institute

**T**HE LIMITATION ORDER that forbids the use of petroleum products for the dustless treatment of coal has forced producers to turn to other materials for this purpose. Compared to the extensive information that is available on the types and amounts of oil to be applied to various types and sizes of coal which has been made possible by the program of research conducted by Bituminous Coal Research, Inc., the Standard Oil Company of New Jersey, the Sun Oil Company, and the Viking Manufacturing Company<sup>1,2,3</sup> the technical information on other materials is scanty and is widely scattered.

Other than petroleum products, glycerin, molasses, sugar refining residues, and calcium chloride, or calcium chloride with various admixtures have been suggested for application to coal to allay dust. As glycerin is a strategic material, it is now out of the question. Molasses or other sugar residues undoubtedly require the addition of calcium chloride or other similar material to prevent drying out. This discussion centers, therefore, largely around calcium chloride and its properties.

<sup>1</sup> Sherman, Ralph A. and Pilcher, J. M., An Experimental Investigation of the Use of Oil for the Treatment of Coal, Trans. A.S.M.E., vol. 60, 1938, pp. 97-109.

<sup>2</sup> Pilcher, J. M. and Sherman, Ralph A., The Treatment of Coal with Oil and Other Petroleum Products, Contribution No. 113, A.I.M.E., 1939, 36 pp. Also as Tech. Report No. VI, Bituminous Coal Research, Inc.

<sup>3</sup> Anonymous, Quiz Book on the Oil Treatment of Coal, published by Bituminous Coal Research, Inc., Standard Oil Company of New Jersey, Sun Oil Company, and the Viking Mfg. Co., 1939, 60 questions and answers.

Calcium chloride is a hygroscopic and deliquescent salt. This means that the vapor pressure of water is so lowered by the solution of calcium chloride that the dry salt will take up moisture from the atmosphere under normal conditions of relative humidity. If the humidity is high enough the salt will take up enough water to dissolve the calcium chloride. The action of calcium chloride in allaying dust, when applied alone to coal, is that of attracting and retaining enough moisture on the coal to stick the dust particles together or to the larger pieces of coal.

If coal were a non-porous material and absorbed no moisture the amount of moisture resulting from the addition of a given amount of calcium chloride could be calculated. Then, if we knew the relation between the moisture content and the dustiness of the coal, the dustiness could be predicted for a given treatment.

Coal is, however, a porous material and is itself hygroscopic. Like calcium chloride, it absorbs or loses moisture until the vapor pressure of the water in the coal is equal to that of the water in the atmosphere and the amount of moisture held changes as the relative humidity of the atmosphere changes. Moreover, coals vary widely in the amount of moisture that they will absorb. As they occur in the bed or in saturated atmospheres, the moisture content of some coals will be less than 2 percent; under the same conditions the moisture content of other coals will be as much as 20 percent.

Because the application of calcium chloride to coal involves the combination of two hygroscopic effects, the moisture content of treated coal cannot be predicted but must be experimentally determined. We know that only the surface moisture and not that within the body of the coal is

effective in allaying dust, and it is evident that moisture absorbed from the atmosphere onto the surface of coal may be absorbed into the coal. By diffusion and osmosis, the concentration of calcium chloride in the water in the coal and on the surface will tend to equalize until the vapor pressure of the system is in equilibrium with that of the water vapor in the atmosphere.

Figure 1, which shows the vapor pressure of solutions of calcium chloride of varying concentrations and for various temperatures as calculated from data presented by Baker and Waite,<sup>4</sup> is useful in indicating the effect of atmospheric humidity on the absorption of water by calcium chloride. The figure is used as follows: Assume that a lot of coal is treated with 8 lb. of 80 percent flake calcium chloride per ton and is stored in an atmosphere having a dry-bulb temperature of 80° and a wet-bulb temperature of 74°. A psychrometric chart shows that the relative humidity is 75 percent and that the vapor pressure of the water vapor in the atmosphere is 0.77 in. of mercury. Figure 1 shows that a vapor pressure of 0.77 in. of mercury is that of a solution containing 33.33 lb. of calcium chloride in 100 lb. of water at a temperature of 80°. Thus, 3 lb. of water will be absorbed per pound of calcium chloride. The 8 lb. of salt used per ton contained  $8 \times 0.8 = 6.4$  lb. of anhydrous calcium chloride. The total water absorbed by the calcium chloride will, therefore, be  $3 \times 6.4 = 19.2$  lb. of 0.96 percent by weight of the coal.

Calcium chloride solutions have the characteristic that the ratio of their vapor pressures to those of water at the same temperature remains practically constant over a wide range of temperature. For this reason the water absorbed by calcium chloride will depend on the relative humidity of the atmosphere rather than on the temperature.

To obtain data on the relation of the moisture absorbed by coal treated with calcium chloride, samples of coal of varying inherent moisture content, to which were added various amounts of calcium chloride, were stored in vacuum desiccators over solutions giving relative humidities of 20, 61, and 98 percent. The total moisture contents at 105° C. of the samples were determined after equilibrium had been attained.

Few data are available on the relation of the dustiness index of coal as measured in the A. S. T. M. standard dustiness-testing cabinet to the moisture content of coal or to the amount of calcium chloride applied to coal.

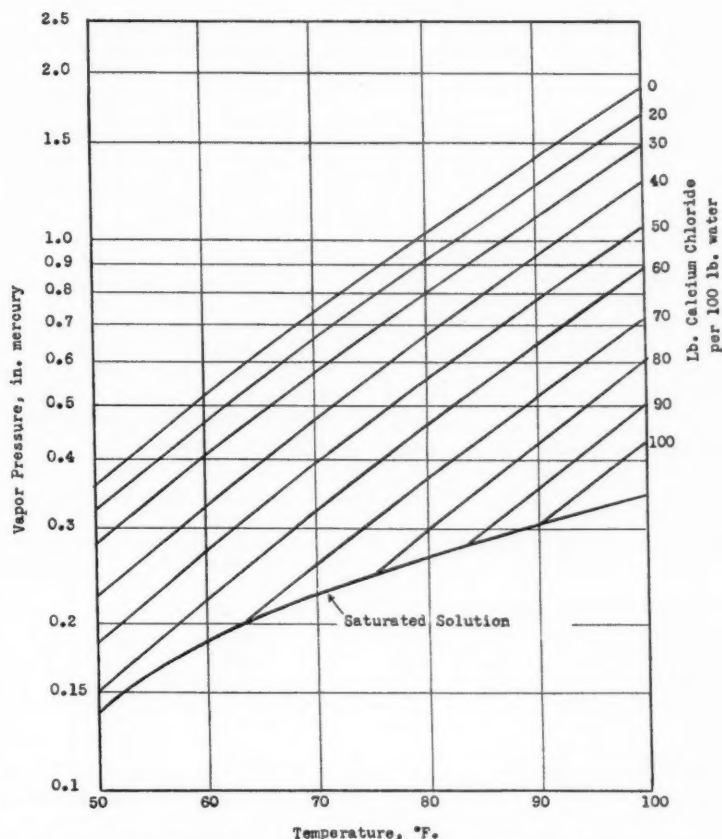


Fig. 1. Relation of the vapor pressure of calcium chloride solutions to the concentration and temperature

### Mixture of Calcium Chloride and Other Materials

The only non-petroleum material known to be commercially available for dustless treatment other than calcium chloride is "Coaladd," formerly called Coalaid. A patent on this material issued to Kleinicke and Hevenor specifies a treating material made up of calcium chloride, cornstarch containing glutin, and water. Kleinicke<sup>5</sup> has also patented a material comprising a deliquescent salt with a hygroscopic colloidal solid coated with a non-drying oil.

"Coaladd" comes in dry, granular form which is mixed with water in the ratio of 2,000 pounds of dry material to 900 gallons of water. It is then sprayed onto the coal, where it forms a protective film.

Godwin<sup>6</sup> has published data on the dustiness index of stoker and pea coals from the Pocahontas No. 4 seam before and after treatment with "Coaladd," and after storage under a vacuum of 27 in. of mercury, and in atmospheres having relative hu-

midities of 10, 20, 30, and 50 percent.

The dustiness indexes of one of the treated coals was 12 whereas that of the untreated coal was 238, but the number of pounds of the material applied per ton of coal was not given. The variation in relative humidity of 10 to 30 percent or the storage under vacuum made little difference in the dustiness index, but the increase to 50 percent relative humidity appreciably reduced the dustiness of the coal. The effect of the material on the vapor pressure of water must have been similar to that of calcium chloride alone.

Another recent patent on treating materials is that of Work and Zetterstrand,<sup>7</sup> who specify the use of bentonite, which is a hydrous clay, and other materials. One preferred formula that is given in the patent is:

Bentonite .....	206 lb.
Calcium chloride .....	1,750 lb.
Molasses .....	1,250 lb.
Aluminum stearate .....	8 lb.
Tergitol .....	3 lb.
Water to make .....	1,000 gal.

Aluminum stearate and Tergitol are wetting agents.

<sup>7</sup> Work, L. T. and Zetterstrand, R. E. Treatment of Solid Fuel to Reduce Dustiness, U. S. Patent No. 2,250,267, 1941.

<sup>4</sup> Baker, E. M. and Waite, V. H. Vapor Pressure of System, Calcium Chloride-Water Chem. and Met., vol. 23, 1921, pp. 1174-76.

<sup>5</sup> Kleinicke, W. E. Composition of Matter, U. S. Patent No. 2,238,776, 1941.

<sup>6</sup> Godwin, F. W. Effect of Storage Conditions Upon Dust-Allaying Coal Treatment, Coal Heat, vol. 36, August 1940, pp. 16-18.

No data are available on the effectiveness of this material and it is not known that it is commercially available.

Calcium chloride may be applied to coal in solution in water or in dry, flake form. When applied in solution the usual concentration is about 3 lb. of 77-80 percent flake calcium chloride to 1 gal. of solution, which then has a specific gravity of about 1.2. It is sprayed onto the coal as it is loaded into the cars at the mines. High-pressure nozzles which give a fine mist are often used, although some recommend lower pressures and coarser atomization to avoid losses by blowing of the fine mist.

Calcium chloride or mixed calcium and magnesium chlorides are available in some districts in concentrated solutions of 1.4 to 1.5 specific gravity in tank cars. This solution is diluted at the mine to a gravity of 1.2 and sprayed onto the coal.

### Freeze-Proofing with Calcium Chloride

Calcium chloride markedly lowers the freezing point of water when in solution. A 26 percent solution of anhydrous calcium chloride in water has a freezing point of  $-28^{\circ}$  F. Coal treated with normal amounts of calcium chloride for dust-proofing will, therefore, be insured against freezing at quite low temperatures.

As calcium chloride is readily soluble in water, it is apparent that rain will wash away the calcium chloride from the coal that the rain penetrates. Because rain does not usually penetrate far into a car or pile of the smaller sizes of coal, the loss may not be great.

Because of its affinity for water, calcium chloride has a drying effect on the skin and on leather. Workmen often object to working with it. The use of cotton instead of leather gloves and the wearing of rubber boots instead of leather shoes, or the regular oiling of leather shoes, are recommended.

In the dry, flake form calcium chloride may be applied to coal by the use of belt or electric vibrating feeders. The dry salt will absorb moisture from the atmosphere to give the same equilibrium result as if it was applied in solution, but the solution is often hastened by spraying water onto the coal as it is loaded into the cars.

As some coal is cleaned in heavy-liquid washers using calcium chloride solutions, it is dust-proofed at the time of cleaning.

Table I gives the amounts of calcium chloride required for the treatment of coal as recommended by the Michigan Alkali Company.<sup>8</sup> The recommendations of other producers are similar. If it is applied in the

<sup>8</sup> Anonymous, *How to Dustproof Coal and Coke*, Michigan Alkali Co., 23 pp.

## SUMMARY

The only two materials other than oil now known to be available for the dustless treatment of coal are calcium chloride and "Coaladd," a material containing calcium chloride.

These materials depend for their dust-proofing qualities on the retention of moisture because of their hygroscopic properties. The extent to which they keep the coal dustless will depend on the relative humidity of the atmosphere of storage and on the inherent moisture content of the coal.

At relative humidities below about 50 percent, the amounts normally applied to coal will not be expected to keep the coal dustless.

Coals having inherent or bed moisture contents of over 8 percent will not be effectively dustproofed by calcium chloride.

Calcium chloride has a marked advantage of freeze-proofing of coal to which it is applied.

Calcium chloride and materials containing calcium chloride are suspected of causing corrosion of metal, particularly of residential stokers. The claims presented are, however, conflicting and conclusive evidence is not available.

TABLE I

Amounts of calcium chloride solution of specific gravity 1.22, 3 lb. 77-80 percent flakes per gallon of solution, required for various ranks and sizes of coal

Rank	Size	Gallons of treating solution per ton of fuel
High-volatile bituminous	Lump and egg.....	1
	Prepared sizes for residential stokers.....	2 1/4
	Nut, pea, and slack for industrial stokers.....	2 3/4
Semibituminous	Prepared sizes and briquettes for residential use.....	3
	Run of mine.....	3

dry, flake form the number of pounds required is obtained by multiplying the gallons by three.

No discussion is given in any of the literature of the producers of calcium chloride as to the suitability of the material for the treatment of the porous coals of the Midwest that are

known to be difficult to treat permanently with oil. From the data presented on the relation of the moisture added by calcium chloride to those coals, it is apparent that the treatment will be less effective with those coals than with those of lower moisture content.

Loading untreated stoker coal produces considerable dust





# Cracking Hard Rock on "The Hill"

*Mining Congress Journal will furnish readers, upon request, with official Government statements on any of these brief summarized announcements*

## METAL

**Aide Named on Certain Labor Training Problems.** War Manpower Commission. Labor training problems of the transportation and non-ferrous mining industries will be dealt with directly by a specially appointed representative of the Apprentice and Training Services, McNutt announced.

**Price Set on Treasury "Silver Ordinary."** Office of Price Administration. A maximum price of 45 cents per troy ounce for sales by the Treasury of its supplies of "silver ordinary" is established in Order 2 under Section 3 (c) of the General Maximum Price Regulation, effective October 30.

### Silver Sales Paperwork Reduced.



Office of Price Administration. A measure to reduce the amount of paperwork required of sellers of silver in connection with reports of sales is provided by Amendment 48 to Supplementary Regulation 14.

**Minerals Chief Warns Against Cross-Hauling.** War Production Board. Cross-hauling must be eliminated voluntarily if we are to avoid serious impairments of supply through inadequate transportation facilities, Chief Richard Lund of the Miscellaneous Minerals Branch told a meeting of the Non-Metallic Minerals Transportation Industry Advisory Committee here.

**Set Substandard Ferromanganese Price.** Office of Price Administration. Maximum prices for substandard ferromanganese sold by persons who did not sell it during March were announced in Order 115 under Section 3(b) of the General Maximum Price Regulation, effective Nov. 3.

**\$6 Premium on Chrome Exports.** Office of Price Administration. A maximum export premium of \$6 per gross ton export sales of chrome ores and concentrates of 38 to 44 percent chromic oxide content was established in Amendment 3 to the Revised Maximum Export Price Regulation, effective Nov. 9.

**Specific Prices Set for Chrome Ores.** Office of Price Administration. Dollars-and-cents maximum prices for chrome ores, designed to stabilize ore costs for pro-

ducers of ferrochromium, chromium chemicals and chrome refractory products, are provided in Maximum Price Regulation 258, effective Nov. 9. Ore of 48 percent chromic oxide content, and 3 to 1 chromium-iron ratio, highest price named is \$43.50 per long ton, f.o.b. cars, New York, Philadelphia, Baltimore, Charleston, S. C., Portland, Ore., or Tacoma, Wash.

**Price Set for "Idle" Cadmium.** Office of Price Administration. Prices at which the Metals Reserve Co., a Government procurement agency, may buy idle or frozen stocks of cadmium for its war stock pile were established in Order 6 under Maximum Price Regulation 204, effective as of Oct. 21.

**"Idle" Iridium Price Established.** Office of Price Administration. Prices at which the Metals Reserve Co., a Government procurement agency, may buy idle or excessive stocks of iridium, iridium alloys, and iridium-containing scrap from manufacturing jewelers, are established in Order 7 under Maximum Price Regulation 204, effective as of Oct. 20. Maximum price for contained iridium \$140 a Troy ounce; for palladium contained is \$18.00; other precious metals contained \$32. Baker & Co., Inc., Newark, is buying agent assisting M.R.C.

**Restrictions on Use of Lead Eased.** War Production Board. Restrictions on the use of lead is eased to permit a number of essential uses which heretofore had been restricted by Order M-38-c, through Amendment 2.

**Ferromanganese Foreign Sale Amended.** Office of Price Administration. Sellers of standard ferromanganese to a governmental agency for shipment outside the U. S. may charge the full \$135 per gross ton maximum price for the commodity if they assign the duty "drawback" privilege to the agency, under Amendment 3 to MPR 138.

**2,000 New Housing Units for Western Miners.** National Housing Agency. Federal funds have been made available for construction of 2,000 dwelling units for nonferrous metal miners in seven western states and WPB granted a blanket priority for the housing, Administrator Blandford announced. To cover costs, \$6,000,000 has been allocated to FPHA which will build the units.

**200 Million Lbs. of Idle Copper Reported.** War Production Board. Almost 80,000 business firms have reported 200,000,000 lb. of idle and excessive inventories of copper and copper base alloy products, and the Government is instituting action in cases where holders have been negligent in filing reports, it was announced by Chief Baxter, of the Materials Redistribution Branch.

**Army Engineers Finding New Materials.** Office of War Information. Army metallurgists and engineers, challenged by shortages in critical materials and ma-

chines, are finding new materials, conserving strategic, critical and essential metals and devising improved methods of production in the "war of alloy steel," two pamphlets issued by the Ordnance Department, reveal.

## COAL

**Miners' Action Solves Coal Threat.** Office of Solid Fuels Coordinator. The action of the United Mine



Workers of America in granting an emergency request to relax restrictions upon working time in mines serving Washington, Oregon and other far western states will greatly relieve a threatened coal shortage that otherwise might have retarded war activities.

**Soft Coal Adjustment Granted.** Office of Price Administration. Dealers purchasing bituminous coal for resale are permitted to adjust their schedules to the extent of increased cost incurred from higher minimums established by the Bituminous Coal Division under Amendment 9 to Maximum Price Schedule 122 (Solid Fuels), effective November 1.

**Qualified Coke Producers Listed.** Office of Price Administration. An official list of high cost producers of beehive oven coke in Pennsylvania who qualify for a special delivered ceiling price of \$6.50 per ton f.o.b. cars at ovens plus transportation charges from Connellsville was published by OPA.

**Overall Coal Price Formula Expanded.** Office of Price Administration. Expanding the scope of its formula for maximum retail and wholesale coal prices, OPA established additional methods by which maximum prices on types of coal not handled during the base price period, may be determined by Amendment 11 to MPR 122, effective November 12.

**Hard Coal Mining Costs Survey Released.** Department of the Interior. Preliminary surveys of the costs incurred by the bituminous coal mining industry during the 12-month period ending June 30 and in the calendar year 1941 are released by the Bituminous Coal Division, Director Wheeler announced.

**OPA Position on Six-Day-Week Clarified.** Office of Price Administration. Reiterating the OPA's willingness to take whatever measures are necessary to cover increased cost of bituminous coal production under an extended workweek, Price Administrator Henderson recently said that price ceilings would constitute no barrier to contracts involving the six-day week.

**Anthracite Industry's Scrap Efforts Praised.** War Production Board. The anthracite industry is doing an outstanding job in collecting critically needed scrap metals, according to a statement issued by Deputy Director Cabot of the Conservative Division.

**Standard Coal Mine Accident Report Adopted.** Department of the Interior. A standardized coal mine accident-report form, designed to save time and labor for mining companies when providing coal-mine accident data has been adopted in states that produce 85 percent of the nation's coal, Director Sayers of the Bureau of Mines informed Secretary Ickes.

## NON-METALLIC

**Fluorspar Ore Freed From Control.** Office of Price Administration. Fluorspar ores—important in the manufacture of steel and aluminum—are exempted from price control in Amendment 42 to Supplementary Regulation 1, effective November 23.

**Domestic Mica Prices Established.** Office of Price Administration. Maximum prices at which Metals Reserve Co., a Government buying agency, may sell non-strategic domestic mica are established in Order 141 under Section 3 (b) of the General Maximum Price Regulation, effective November 19.

**Fluorspar Maximums Are Increased.** Office of Price Administration. An increase in maximum prices for metallurgical fluorspar, designed to stimulate production, expand facilities and encourage new producers to enter the field, is announced in Maximum Price Regulation 126, as amended (Fluorspar), effective November 23. Ceiling prices range from \$25 to \$28 per short ton, according to calcium fluoride and silica content, as against the previous prices for high grade fluorspar at \$23 to \$25.

## GENERAL

**Platinum Jewelry Manufacture Halted.** War Production Board.

Use of platinum in all jewelry manufacture is stopped by an amendment to Conservation Order M-162, effective at once. Platinum in process October 31 may be processed to completion before January 1, but must stop on that day.



"Hand over them aluminum pens, that copper ash tray, them steel paper clips and that zinc ink stand!"

**Quotas to Limit Recaps, New Tires.** Office of Price Administration. All passenger cars will be eligible for recapping services or replacement tires under the national mileage rationing program effective November 22, but those receiving new tires or recapping certificates will be limited by quotas to be assigned to War Price and Rationing Boards.

**U. S. Still Has Vast Labor Reserve.** Office of War Information. While Germany long ago reached maximum utilization of her manpower and Japan has faced a labor shortage for two years, the U. S. has great unused resources after spending the first two years of this country's war production program in taking up the slack in its labor force, OWI reported.



# Wheels of Government

As Viewed by A. W. Dickinson of the American Mining Congress

**G** RIM FACED CONGRESSMEN returned to Washington from the November election and the attitude of both House and Senate has begun to reflect the temper which may be expected in the coming session of the 78th Congress. The Administration's demand of authority to suspend, for the duration of the war, present tariffs and restrictions upon the movement of persons, property and information into and out of the United States met with a cold reception. The "by request" Administration measure introduced by Chairmen Doughton and George has since been rewritten to include the requested presidential tariff powers while carefully omitting any authorization to override immigration barriers. It is believed that hearings now under way before the Committee on Ways and Means, and if necessary also in prospect before the Finance Committee, definitely forestall any possibility of enactment of this bill in the present session. Commentators observed that the chances for such legislation in 1943 are very remote.

The important Committee on Ways and Means is an example of what the significant Republican ground swell has done. There are now seven vacancies to be filled for the empty seats of Representatives Boehne of Indiana, Duncan of Missouri, Hill of Washington, Ford of Mississippi, Jarrett of Pennsylvania, McKeough of Illinois, and Crowther of New York. At present the committee consists of 15 Democrats and 10 Republicans, and if the anticipated 14-11 division prevails when the committee is organized in January there will be four new Democratic members and three Republicans.

## Manpower All Important

Increasingly important as more men leave for the armed forces and industrial and agricultural production continues to expand, the control of the nation's manpower is now a problem of the first rank. By Executive Order in early December the Selective Service System was placed under Chair-

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## Washington Highlights

**ELECTION:** Brings new faces in 1943.

**TARIFF SUSPENSION:** Gets cold reception.

**MANPOWER CONTROL:** More of it.

**SELECTIVE SERVICE:** Between 18 to 38 you're in the Army.

**U. S. EMPLOYMENT SERVICE:** Spigot for all jobs.

**SOLDIER-MINERS:** Their furlough is helping metal mines.

**WAGE CONTROLS:** 29 industries subject to "Little Steel" formula.

**WAR LABOR BOARD:** Commission for non-ferrous mining.

**GOLD MINES:** Some granted relief.

**SILVER BILL:** Silverware manufacturers seek unpledged silver "in furtherance of the war effort."

**GUFFEY ACT:** Life ends in April unless extended.

**CONTROLLED MATERIALS PLAN:** Pulling tighter on raw materials.

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man Paul McNutt, of the War Manpower Commission. Now included in WMC powers is the right to hire, recruit and transfer labor for war industry. Voluntary enlistments in the armed services of men between 18 and 38 have been stopped. The U. S. Employment Service, a unit of the WMC, has been made the principal agency for mobilization of farm and industrial labor. All hiring, rehiring, solicitation, and recruitment of workers in or for work in any establishment, plant, facilities, or occupations

are to be conducted solely through the U. S. Employment Service or in accordance with such arrangement as Chairman McNutt may approve; and no employer shall retain in his employ any worker whose services are more urgently needed in any activity designated as more essential by the WMC.

The above outlined procedure including particularly the stoppage of voluntary enlistments, reduction of the draft age to 38 years, and the probable furloughing of many men over 38 years of age now in the Army, will be helpful to the mines' labor situation. The previous furloughing by the Army of 4,000 soldier-miners was a constructive step and if present plans to secure additional miners from Mexico carry through there is reasonable assurance that the products of our mines, so badly needed in the present war effort, will be forthcoming.

## WLB Wage Controls

The War Labor Board has acted quickly in issuing orders and expanding its offices and organization throughout the country to meet its new responsibilities in ruling on wage increases. In the 29 industries to which WLB has applied the "Little Steel" formula the regional directors will have authority to pass on requests for general increases in straight-time rates up to 15 percent above the levels prevailing January 1, 1941. Wage increase requests in other industries will be referred to WLB headquarters for final action after analysis by the regional directors. Included in the 29 war industries are iron and steel and their products, logging, machinery, metal mining, smelting and refining, non-metallic mining and quarrying, petroleum, coal, and natural gas products.

A WLB Non-ferrous Metal Commission is handling both labor disputes and voluntary wage and salary adjustments in non-ferrous mining, milling, smelting and refining plants. Chairman of the Commission is



Charles A. Graham, acting regional director in the Denver area. John Gorsuch, of Denver, is vice chairman; labor representatives are James F. O'Brien, of the Butte Metal Trade Council (AFL), and A. E. Stevenson, of the Cleveland Industrial Union Council (CIO); industry representatives are Henry M. Hartman, of Salt Lake City, and S. M. Thompson, of Denver.

Also of interest to mining men is the appointment of Carroll A. Daugherty as director of the WLB Division of Review, Research and Analysis. Two years ago Daugherty was in charge of the Research Section of the Wage and Hour Division, Department of Labor.

### Mine Relief Measure

Following the gold mine shut-down order of October 7, and as the result of difficulties encountered by other mineral producers in the present emergency, Senator James E. Murray, of Montana, has introduced a bill which would permit State or Federal district courts to issue suspension orders giving relief from contractual payments and the performance of certain work on property because of inability to secure necessary labor, power, supplies or equipment; or when producers cannot fulfill obligations because of the operation of Federal orders or requirements. Provision is made in the bill for 4 percent RFC loans to prevent loss or damage to gold mining properties by enabling owners to pay local, county, or state taxes; to maintain the property; and to pay interest on outstanding obligations. Assessment work would also be suspended on any number of claims until after the war.

While a number of the producers' appeals from the gold mine shut-down order have been denied by the WPB Appeal Board, an exception has recently been made in the case of the Golden Cycle Corporation and the Stratton Cripple Creek Mining and Development Company. The Golden Cycle mill, on the condition that it will also handle zinc ores, is granted a six-month operating extension which includes the operation of the mines. The decision of the Appeal Board reads as follows:

#### "GOLDEN CYCLE CORPORATION

Colorado Springs, Colorado  
December 3, 1942

"The following relief from Order L-208 is hereby authorized:

"Permission is granted to mine and mill gold-bearing ore during a period of six months beginning December 8, 1942, provided that no worker shall be employed in these operations if the War Manpower Commission finds that he is needed in mining operations elsewhere; and provided further, that no worker shall be employed in milling operations unless the mill is being utilized for or in the process of conversion to the production of zinc as well as gold-bearing ores in

a manner satisfactory to the War Production Board; and provided finally that, in operating its mill, appellant shall not discriminate between gold-bearing ore originating in its own mines and gold-bearing ore originating in other mines in the Cripple Creek District.

"This grant shall also apply to the gold mining operations of the Cresson Consolidated Gold Mining and Milling Company and the United Gold Mines Company.

"The provisions of Order L-208 are waived to the extent required to obtain the relief authorized above, provided that Order L-208 in all other respects and all other orders and regulations of the War Production Board are fully complied with."

Senator-elect James G. Scrugham, of Nevada, has also announced that permission has been granted the Comstock mine, near Virginia City, Nev., to continue operations on testimony that 97 percent of the output is silver and that most of the men employed are elderly, averaging 47 years, and would not be eligible for transfer to other metal mining.

A number of other gold mines have been granted permission to continue extracting broken ore in stopes for limited periods, and WPB's Appeals Board has issued a general announcement of the conditions under which relief may be granted in further cases.

### Green Silver Bill

A bill introduced by Senator Green, of Rhode Island, in behalf of the silverware and jewelry manufacturers is now under debate on the floor of the Senate. In its first form the bill authorized the sale of unpledged silver in the Treasury for use "not inconsistent with the war effort." The Banking and Currency Committee substituted the wording "in furtherance of the war effort" and as it now stands the bill provides that the Secretary of the Treasury, upon recommendations of WPB, can sell or lease upon terms he deems advisable, any Government-held unpledged silver in furtherance of the war effort at an average price of not less than 50 cents per ounce. At the committee hearing the original form of the bill was opposed by Senator Pat McCarran of Nevada, Representative Compton I. White of Idaho, and Board Chairman F. H. Brownell of the American Smelting and Refining Company. The presentations of these witnesses included the statement that sufficient foreign silver, available at 45 cents per ounce, is now being imported to care for essential war needs and that silver for other uses may be purchased at 71.11 cents per ounce plus the cost of transportation.

On December 11 Senator McCarran while speaking against the Green bill completed his offering of a substitute measure. This would set the price for all silver sold under the proposed Act at not less than 71.11 cents per

ounce; but would provide further that out of any silver stock acquired by Federal agencies other than the Treasury there shall be reserved and made available not to exceed 30,000,000 ounces per annum for the exclusive use and purchase, at not less than the current market price, by domestic manufacturers (1) for the manufacture of silver articles for civilian use and (2) for the converting of existing plants of such manufacturers to war production.

It is now evident that no form of bill can be enacted in the present session but Senator McCarran's tender of 30,000,000 ounces in his substitute measure is a very definite concession to the sponsors of the Green bill.

### Guffey Act Extension

Early in November there were persistent rumors that Interior Department's Bituminous Coal Division desired to secure enactment in the 77th Congress of amendments to the Guffey Act, which would again extend the life of the act beyond its expiration date next April and also add certain recommended administrative provisions. Later came the introduction by Senator Guffey, of Pennsylvania, and Representative Jenkins, of Ohio, of a UMW sponsored bill which would make the Bituminous Coal Act of 1937 permanent legislation, and establish a new Bituminous Coal Commission in the Interior Department made up of representatives of the mine workers, the coal producers, and the public. Under the bill the proposed Commission would take over the present functions of the Bituminous Coal Division.

Unless agreement is reached by the coal industry it is possible that the 78th Congress may permit the Coal Act to expire and that the War Production Board may create a Coal Division under its Minerals Bureau.

### Controlled Materials Plan

A new system of control over all war and essential civilian production was announced early in November, and the plan will be in full effect July 1, 1943. By balancing munitions production it is proposed that only the materials actually required under balanced schedules need be allotted in any particular period. Carbon and alloy steel, copper, and aluminum will be the first "Controlled Materials" directly allotted under the plan. Literature is issuing from WPB outlining the technical details of CMP, and the mining industry has been reassured by the statement that Preference Rating Order P-56 and similar orders will be adopted to conform to the plan, to the end that maintenance and repair requirements may still be handled by the Mining Equipment Division.

Changes during the last few weeks in the WPB have made Ferdinand  
(Continued on page 64)

# PERSONALS..

Ernest Kanzler, Director General for Operations, WPB, has announced the appointment of **Arthur S. Knoizen** as director of the Mining Equipment



A. S. Knoizen

Division, succeeding **Dr. Wilbur A. Nelson**, who has been assigned to staff duties in the Office of the Director General for Operations. Mr. Knoizen is on leave of absence from the Joy Manufacturing Company of which he is vice president. He has been associated with this company and the mining industry for many years and is well known throughout the industry.

In the second major recognition of his work within a month, **D. D. Moffatt** was named president of the Utah Copper Company at a recent directors' meeting in New York City. He had been vice president and general manager for the past 12 years. Early in October Mr. Moffatt was elected vice president of the Kennecott Corporation, of which Utah Copper is a principal subsidiary.

**James A. Marsh**, formerly chief geologist for Utah Copper Co., has been appointed district engineer of the United States Bureau of Mines for Utah and Wyoming. Under his direction field work has been stepped up in these two states in the exploration for critical and essential minerals.

The addition of two geologists to the staff of the Virginia Geological Survey is announced by **Dr. Arthur Bevan**, State Geologist. They are **Dr. Byron N. Cooper** and **Dr. William R. Brown**. Dr. Brown, who received his Ph.D. degree from Cornell University, is engaged in studies of the mineral resources of Piedmont, Va., especially those useful to war industries. Dr. Cooper, who received his Ph.D. degree

from the University of Iowa, is in charge of studies on the stratigraphy, structure, and nonmetallic mineral resources in the southern half of the Appalachian Valley in Virginia. **Dr. Raymond S. Edmundson**, for some years a staff geologist, is in charge of similar studies in the northern half of the valley.

**Wm. M. Lacey** has accepted a position with the McAlester Fuel Co., McAlester, Okla. Mr. Lacey had been superintendent of the Sayreton mines, Republic Steel Corp.

**A. C. Ditttrick**, formerly with Hanna Coal Company, at St. Clairsville, has become associated with the staff of **J. W. Woerner**, with **W. H. Warner & Co.**, as assistant general manager of mines.

**Earl F. Hastings**, recently returned from Honolulu, has been appointed assistant director and projects engineer for the Arizona Department of Mineral Resources, with headquarters at Home Builders Building, Phoenix, Ariz.

**John Paul Dyer**, now vice president of Phelps Dodge Refining Corporation, has been elected a director of this subsidiary of Phelps Dodge Corporation. Mr. Dyer has been affiliated with Phelps Dodge Refining Corporation since 1929 and has been a vice president since 1936.

**J. R. Hobbins** of New York, president of the Anaconda Copper Mining Co., was in Montana recently inspecting company operations in Butte, Anaconda and Great Falls.

**P. D. I. Honeyman**, superintendent of the International Smelting & Refining Company's Miami smelter, is now also general superintendent of Inspiration Consolidated Copper Co. He succeeds **R. S. Newlin**, who went to Anaconda Copper Company's New York office.

**R. C. Allen**, vice president of Oglebay, Norton & Co., has returned to his duties in Cleveland, Ohio, after a month's stay in Texas. Mr. Allen recently resigned his post as deputy chief of the iron and steel division of the War Production Board, in Washington, D. C.

**Edward Thornton**, formerly vice president and general manager, Summitville Mines, Inc., Summitville, Colo., is now vice president and general manager of Krome Corporation, with headquarters at 208 Hub Building, Marshfield, Oreg. Operations of the company involve the recovery of chrome concentrates from beach sands.

**G. R. Stahl**, in charge of labor relations for the Koppers Coal Division of the Eastern Fuel and Transportation Associates, Mt. Hope, W. Va., recently visited Bluefield. He was accompanied by **Wm. Valetin** of Pittsburgh, the company's new director of publicity.

Oglebay, Norton & Co. has announced the retirement of **R. A. Angst**, superintendent of The Montreal Mining Co., Montreal, Wis., effective December 1, 1942. Mr. Angst has reached the age of retirement after 43 years of active service in the mining business. For the past 30 years he has been associated with Oglebay, Norton & Co. **R. A. Bowen**, who has been Mr. Angst's assistant for the past 20 years will succeed him as superintendent.

**J. J. Sellers**, formerly general manager, Eastern Mines, Blue Diamond Coal Company, has resigned to become affiliated with the firm of Peat, Marwick, Mitchell & Co., certified public accountants. Mr. Sellers will specialize in handling matters arising under and pertaining to the Federal and state tax laws. His office will be located in New York City.

**C. H. Mathewson** of New Haven, Conn., has been elected president of the American Institute of Mining & Metallurgical Engineers. Dr. Mathewson is Professor of Metallurgy and Chairman of the Department of Metallurgy, Yale University.

**Robert E. Phelan**, until recently manager of Basic Magnesium, Inc., at Las Vegas, Nev., has been appointed general manager of Kalunite, Inc., F. S. Alfred, Jr., executive of Olin Corporation, parent company of Kalunite, Inc., announced.

**A. E. Mosier**, president of Lucky Tiger-Combination Gold Mining Co., resigned October 1, and was succeeded by **Dr. George B. Norberg**.

Solid Fuels Coordinator **Harold L. Ickes** today announced the appointment of **Oscar F. Ostby**, New York, N. Y., as Assistant Deputy Coordinator of Solid Fuels for New England. Mr. Ostby, who has had an extensive background in the use of mechanical coal burning equipment and is familiar with the distribution of solid fuels in the East, will maintain an office at Boston, Mass.

**Charles Baxter**, son of Prof. C. H. Baxter, Houghton, Mich., is a second lieutenant with the United States Army at Camp Leonard Wood, near Rolla, Mo. Lieutenant Baxter is a mining engineer, and prior to his enlistment was employed with the engineering department of the Castile Mining Co., at Ramsay, Mich.

**E. W. Leach**, of Duluth, assistant manager of Pickands, Mather & Co., has become manager of the Missabe Mountain iron mine at Virginia, Minn., for the Charleson Iron Mining Co.

**Dr. W. A. White** and **R. M. Barbour**, geologists, recently joined the North Carolina Department of Conservation and Development at Raleigh. Dr. White is a graduate of Duke University and has his masters degree from the University of North Carolina and the Montana School of Mines. He also has a Ph.D. from the University of North Carolina.

**H. V. Putman**, manager of the Transformer Division, was elected to the rank of vice president by the Board of Directors of the Westinghouse Electric and Manufacturing Co.

**C. M. Baker**, formerly mining engineer with Republic Steel Co., is now a member of the engineering staff of Tennessee Coal, Iron and Railroad Company, in Alabama.

**Russell Bateman**, formerly section foreman with the Koppers Coal Co., is now general foreman with the Yorkshire Coal Co., Madera, Pa.

**L. H. Duriez**, manager of Goldroad mine at Goldroad, Ariz., for U. S. Smelting, Refining & Mining Co., has been appointed manager for the company's operations at Bayard, N. Mex. **John Knaebel** is assistant manager at Bayard.

**J. N. Hedding** resigned as superintendent of the Warwick mine, Duquesne Light Co., to accept the position of superintendent of the Nema-colin mine, the Buckeye Coal Co.

**K. M. Quickel** was recently appointed general manager, Industrial Collieries Corp., having been assistant general manager since 1940. He has been affiliated with the Bethlehem subsidiary since 1916.

neer's Handbook in 1918, the latest revision of which—the third edition—was issued in 1941. He was a member of the American Institute of Mining and Metallurgical Engineers, the Institution of Mining and Metallurgy, London; the Mining and Metallurgical Society of America, from which he received its gold medal for contributions on mining subjects in 1923.

**Harry Lawrence Brown**, widely known mining engineer, died in Santa Fe, N. Mex., on October 18. He was 62 years of age. Prior to his retirement in 1934, because of ill health, Mr. Brown had been a member of the staff of the American Metal Company and Climax Molybdenum Company.

**Dr. Frederick M. Becket**, a consultant to Union Carbide and Carbon Corporation, died December 1 at the Roosevelt Hospital, New York, N. Y. He was formerly president of Union



Carbide and Carbon Research Laboratories, Inc., and former vice president of Union Carbide Company, Electro Metallurgical Company, and Haynes Stellite Company, all units of Union Carbide and Carbon Corporation. He was 67 years of age.

**William Salt**, for many years head of the Service Department of the De-Laval Steam Turbine Co., died suddenly on Saturday, October 31, 1942. Mr. Salt was associated with the company for more than 40 years.

**Reginald F. Jopling**, former vice president of the American Steel and Wire Company, died October 22, in Cleveland. He was 76 years old.

**George Gibbs**, one of the most prominent and successful coal operators in the Williamson field, died at his home in Sprigg, W. Va., October 25, following an illness of several years. He was 54 years of age.

**W. F. Ulrich**, Coleraine, Minn., superintendent of the Trout Lake concentrator of the Oliver Iron Mining Co., died October 27. Mr. Ulrich had been an employe of the Oliver on the Mesabi iron range of Minnesota for many years.

**E. P. Earle**, president of the Nipissing Mines Co., died October 12 at his home in Montclair, N. J., at the age of 82.

## — OBITUARIES —

### Robert Linton

AN APPRECIATION BY ALBERT J. JONES

The mining industry lost one of its ablest men in the passing of **Robert Linton**. He had not been very well for some time, but spent long hours right up to the last in unrewarded efforts



for his Government and the miners. He was consultant for the Metals Reserve in this area, and did invaluable research work and compilation of data to aid the war effort in the field of mining. As all great men, he lived modestly, and quietly, accepting little for himself, and giving all that he had. The memory of him will never cease to inspire those who knew him, but the loss to those he might have influenced in the future, and the loss of the material help at this time, is a terrible blow.

Death came to him in his sleep on the morning of November 12.

**William D. Green**, Metallurgist for the Combined Metals Reduction Company, Bauer, Utah, died October 22. Mr. Green was a specialist in flotation technique and most of his time was spent in solving difficult problems involving the separation of lead and zinc in complex ores. He is responsible for the development of the flow sheets employed by Combined Metals at its Bauer plant and its new mill at Pioche, Nevada.

**Charles F. Spencer**, president of the Pittsburg Coal & Mining Co., one of the largest operators in the Kansas fields, died December 1. He was 69 years of age and a pioneer in the Southwestern coal fields.

**Robert K. Jeffrey**, vice president and director of The Jeffrey Manufacturing Co., Columbus, Ohio, died September 29 at his home. He was the elder son of R. H. Jeffrey, chairman of the board, and a grandson of J. A. Jeffrey, founder of the company. At the time of his death he was vice president in charge of engineering design.

**Robert Peele**, Professor Emeritus of Mining at the Columbia University School of Mines and editor of the internationally known Mining Engineer's Handbook, died December 8 of a heart ailment at his residence, 490 West End Avenue, New York. His age was 84. Professor Peele wrote extensively on mining subjects and became editor of the Mining Engi-



# News and Views

## Eastern



## States

### TENNESSEE

»»» American Zinc Company's Grasselli mine and its employees at New Market were presented with the nation's highest safety trophy by U. S. Bureau of Mines at ceremonies at

certificate of honor for his personal part in the record.

Among company officials present for the ceremony were Howard I. Young, of St. Louis, president of American Zinc, Lead and Smelting Company, and Harley A. Coy, general



Employees at the Grasselli mine of the American Zinc Company win the nation's highest safety award for 1941

the mine in early October. The bronze trophy—a woman holding out a child in her arms (symbolic of a miner's family)—was won for the best safety record in the national metal mine group in 1941. During that year Grasselli mine, with more than 125 employees, operated 216,044 man hours without a single lost-time accident. The trophy, awarded by *Explosives Engineer Magazine*, was presented by Dr. D. J. Parker of Birmingham, a supervising engineer of the Bureau of Mines. Acceptance was made by Fred Thurman, general superintendent of the Grasselli and Jarnagin mine group at New Market. The Grasselli miners were on hand in a body and each received an individual

superintendent. After the ceremony, a buffet supper was served for officials, employees and guests. The winner will retain the trophy for one year until it is won by another mining company, and then Grasselli will be given an exact replica for permanent keeping.

### PENNSYLVANIA

»»» B. W. Deringer and Clarence Donaldson, production managers for the Central Pennsylvania Coal Producers' Association and the United Mine Workers of America, District No. 2, respectively, have formed 153 labor-management committees known as mine victory coal production com-

mittees at mines in Central Pennsylvania producing 80 percent of the tonnage of the district; and they report that the work these committees are doing is of tremendous importance to the country's war effort, by increasing the production of bituminous coal in this district in face of a diminishing labor supply and difficulty in securing material and equipment. These committees in addition to multiple activities in and around the mines are assisting in rubber and gasoline rationing, scrap salvage drives, etc.

»»» More than 500 representatives from some 200 industrial concerns and a number of governmental agencies attended the Industrial Hygiene Foundation's annual meeting in Pittsburgh November 14, which had for its theme, "Keep War Workers Well." Program highlights included a keynote address on manpower conservation by Chairman Paul V. McNutt, of the War Manpower Commission, followed by a panel on Fatigue in Wartime Industry, including hours of work and rotation of shifts. Dr. C. D. Selby, of General Motors Corp., presided.

A section was devoted to More Manpower Through Reduction of Absences at which Dr. R. R. Sayers, Director, U. S. Bureau of Mines, presided. Subjects covered included the common cold, the role of psychology and psychiatry in absences and a progress report on a study to reduce sick absences which is being conducted by a number of the Foundation's member companies in collaboration with the U. S. Public Health Service. Dr. T. Lyle Hazlett, medical director, Westinghouse Electric and Manufacturing Co., directed a panel on Putting Women, Older Men and Physically Handicapped to Work. The meeting concluded with a discussion of a Practical Nutrition Program for Industry, by Dr. Robert S. Goodhart, office of Defense Health and Welfare Services, and the consideration of a basic plan for industrial deferments by Russell J. Greenly, acting chief of personnel, Carnegie-Illinois Steel Corporation.

»» F. B. Wood Coal Mining Company, Barnesboro, Pa., has recently opened a stripping operation near the town of St. Benedict, Cambria County and is producing several hundred tons of coal per day.

## NORTH CAROLINA

»» Governor Broughton, of North Carolina, announced recently that an expanded program of the Minerals Division of the North Carolina Department of Conservation and Development was now under way. He said that two geologists recently have been employed to help Dr. J. L. Stuckey. They are Dr. W. A. White and R. M. Barbour. Both of them, said Bruce Etheridge, head of the Department of Conservation and Development, are making surveys urgently requested by war industries and the War Production Board. Etheridge explained that over 90 requests for specific information on North Carolina minerals have been received.

"While the state's chief mineral contribution to the war to date has been in mica production," said Governor Broughton, "we are being called upon for up-to-date information on

minerals which have not been mined in this state for decades. We feel fortunate in being able to secure the services of both Dr. White and Mr. Barbour to help meet this emergency." A cooperative project was begun with the U. S. Geological Survey for the study of mica, feldspar and kaolin. The Spruce Pine District of Avery, Mitchell and Yancey counties has been examined in detail, he revealed, and a report on that area is almost complete. During this year the study of deposits in Haywood, Jackson, Swain and Macon will be completed, and then work will be carried to the Piedmont area, where, Stuckey revealed, mica is known to occur in many counties, though it is not being worked.

The state has been asked to triple its mica output, but Dr. Stuckey said he was uncertain whether the goal could be reached this year. A recent survey, made in cooperation with the TVA, of chromite and vermiculite, has been completed. The chromite report is ready for publication, and the report on vermiculite is available in mimeograph form. Other deposits surveyed with the TVA include copper, and reports recently were published on clay and olivine deposits. An immediate project the division has

undertaken is a study of corundum. This mineral, used as an abrasive, formerly was mined in North Carolina, but competition of imported material forced closure of the mines. The War Production Board has asked the state for an immediate report on these deposits. Dr. Stuckey said that in addition to these projects, his division has been requested by private industries to furnish reports on manganese, copper, vermiculite, magnetite and limonite.

There are large deposits of olivine in North Carolina which are reported being studied by Henry J. Kaiser, West Coast shipbuilder, for the purpose of obtaining information on the magnesium content.

## WEST VIRGINIA

»» A meeting held in Charleston, W. Va., on October 28, may be considered of much importance to West Virginia operators. The purpose or intent of those present was to develop a voluntary service organization to interchange information between companies to relieve the cost of unemployment compensation for those companies which are being gouged by employees leaving employment with or without cause and who are not legally entitled to full unemployment benefits. The result of such piratical practice is a charge against the unemployment account of one or more former employers who have no chance to protest until too late to be of practical value.

Under the West Virginia law's merit rating system the employer may earn a taxing rate of 1.8 percent of his payroll under certain regulation stipulations or reduce the rate to a minimum of nine-tenths of one percent if a better employment record is obtained. The base rate is 2.7 percent of wages paid and remains so until there has elapsed three consecutive years throughout which an individual in the employ of the company

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- (1) COALADD is economical and easy to apply at the mine
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COALADD is all "plus-value." It makes coal better merchandise and makes users better customers.

Dust-treatment of coal before shipment to market is the coming thing. Already many thousands of tons are treated daily with COALADD. Why not make a thorough test of COALADD at one of your loading pockets? It costs little to do this. It may show you how to improve your dealer relationship.

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**PETER F. LOFTUS**  
Consulting Engineers

ENGINEERING AND ECONOMIC SURVEYS, ANALYSES AND REPORTS ON POWER APPLICATIONS AND POWER COST PROBLEMS OF THE COAL MINING INDUSTRY

Oliver Building Pittsburgh, Pa.

could have received benefits, if unemployed and eligible. The tax rate decreases to 1.8 percent when the payments to his account exceed the benefits charged by an amount equal to 7½ percent of his average annual payroll. This taxing rate will be still further reduced when the payments credited to the taxpayer's account for all past years exceed the benefits paid by 10 percent. Under that provision the taxing rate takes the nine-tenths of 1 percent.

Voluntary cooperation between companies, advising separations as they occur, will serve to keep the list of voluntary "vacationers" at a much reduced figure and a reduction to many tax bills.

»»» The collection and disposal of scrap material useful to the demands of war is still an active matter in the Kanawha District. During September 504 gross tons of iron and steel, 10,910 lb. of copper and 23,314 lb. of other metals were started to the mills. All of this was industrial scrap, but a household collection of outstanding merit was made by children at the Boone County Coal Corporation's Sharples mine. These youngsters collected a total of 44,723 lb. of scrap with no industrial scrap included and the same group is active in selling stamps and bonds as well.

»»» First aid meetings throughout southern West Virginia are over for this year, but this does not mean there is any relaxation on the part of the safety-trained men to keep up their training. It is worth noting that these first aid crews, instructed and trained to give valuable first aid to injured people, are an asset to any community if they are used as auxiliary instructors to civilians, who otherwise would have but a sketchy idea of administering first aid. The expert knowledge these first aid crews could add to our civilian welfare can be considered of great value and practically every mine in West Virginia, and possibly other states, has these trained men at call. It is a war time resource that should not be overlooked.

»»» The Algoma Coal & Mining Company at Algoma, West Virginia, put five women to work on their picking tables. Four of these were wives with families and some of whose children were in the armed services. The union denied them the right to do this work because no provision was made in their constitution for women workers, so the employment ended.

## ALABAMA

»»» The Birmingham District is the mining center of Alabama, with the city of Birmingham as headquarters for most of the operators. Among the largest mining companies are:

Tennessee Coal, Iron and R. R. Co., with furnaces, steel mills and other plants. They operate 3 ore mines and 4 coal mines. The Republic Steel Corporation operates 2 ore mines and 2 coal mines, and the Sloss-Sheffield Steel & Iron Co. operate 2 ore mines and 3 coal mines. The Woodward Iron Company is producing from 2 ore mines and 2 coal mines, whereas Alabama By-Products Co. is producing from several coal mines, and the Brookside-Pratt Mining Co. is operating 5 coal mines.

There are other smaller operators in the district as well as in outlying districts. The approximate total for the state is around 700, of which 80 are railroad-connected and about 634 truck and wagon mines.

Red ore is the common name for the iron ore in the Birmingham area and it is mined from the well known Red Mountain, which extends through the district for a distance of about 25 miles, with a tremendous tonnage of ore available. A number of improvements for handling and processing this ore and getting it in condition for use in the furnaces are now being made. Both the T. C. I. and Republic companies are building large plants for this purpose.

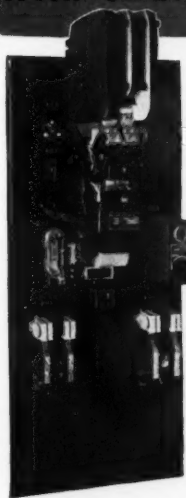
A certain percentage of brown ore is used with red to make pig iron of the desired texture, and the bulk of this is mined in the outlying districts. Operations have been increased considerably of late and improved methods for handling have been installed in a number of mines.

»»» In order to hold down the percentage of accidents and deaths in mining operations, safety and inspection officials are constantly on the alert. Mr. E. J. McCrossin, chief of the Division of Safety and Inspection, Department of Industrial Relations, in a recent report says that there have been 47 persons killed in coal mine operations in Alabama during the first 10 months of this year, as against 46 for the same period of last year. However, coal production for 1942 has totaled above 16,000,000 tons as compared with 12,802,000 tons for 10 months of last year.

Safety rules, similar to those for coal mines, have been in operation in the metal mines and open pits during this year, with the result that Alabama's metal mines and open pits and quarries, operated throughout the month of October without an accident, the report of Mr. McCrossin said.

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Efficient substations mean more production by eliminating time losses resulting from disturbances on feeder circuits. This is true of the semi-automatic station which is attended only in starting and stopping and of the full-automatic station which requires nothing but rare, periodic attendance.

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Representatives in Principal Mining Areas

**I-T-E** **CIRCUIT BREAKER CO.**  
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## Central



## States

### ILLINOIS

»»» In the interest of maintaining maximum production of minerals in Illinois, the Illinois Mining Institute on November 10, passed a resolution regarding the shortage of manpower in the mining industry. Copies were sent to Illinois and Washington officials. The last two paragraphs of the resolution are:

*Resolved:* That the Director of Selective Service and Registration in the State of Illinois be advised of the critical situation existing in personnel of the mining interests of this state and that, insofar as possible, the key men of our mining operations, mining engineers, and students of mining engineering should be deferred from military service so that mining production may be increased, rather than decreased, for the good of the entire nation; and *be it further*

*Resolved that:* a copy of this resolution be sent to the Director of the Selective Service System for the United States of America at Washington, D. C., and that a copy be sent to the Director of Selective Service and Registration in the State of Illinois, at Springfield, Ill.

Carl T. Hayden is president of the Institute and B. E. Schonthal, secretary-treasurer, with headquarters at 28 East Jackson Blvd., Chicago, Ill.

### WISCONSIN

»»» The Army-Navy "E" award was made to employers of Macwhyte Company of Wisconsin on November 21. All men and women employed by Macwhyte Company as of that date were given the honorary "E" pins. Special ceremonies were held for the occasion, with officials of the Army and Navy making the awards, and acceptances by employees and officials of the company.

### KANSAS

»»» The increased war demand for fuel has resulted in a strong revival in strip mining in southeastern Kansas, where strip mines are being operated to full capacity.

One of these new properties is the Clemens Coal Company (Pittsburg, Kans.). Here the coal is hauled to the loading docks both by locomotive and by trucks. Where trucks are used, hard-surfaced roadways with not over 3 percent grades, are constructed down into the pits. The trucks are filled directly from the loaders.

When locomotive power is used for haulage, the tracks are at the top of the bank and the stripped coal is picked up by the loader, dumped into the large crane skip shown in the photograph on this page and then loaded onto the railroad cars shown at the top of the bank. Most of the hauling is now being done by locomotives.

Because of priorities, material shortages, and trouble in obtaining replacements, the Clemens Company has adopted a new "Inspection and Maintenance" policy.

All equipment is inspected twice as often as in pre-war days. Attention to lubrication has been made a No. 1 priority. Repair and maintenance crews are using substitute materials whenever possible in an effort to conserve every pound of material needed for the war.

The wire ropes at the Clemens mines are given almost daily inspections. Whenever switching or re-socking will add to the life of a rope, the work is done.

While preformed rope is not suitable for many of the machines used in strip mining, it has been found at the Clemens mines that where high speed work is required over small drums, a switch to preformed has made a big saving in rope costs and in accidents as well. More and more preformed rope is replacing the ordinary as replacements are made.

By doubling inspections and care of all equipment, the company hopes to be able to hold production to its present high level, and keep equipment replacements to a minimum.

»»» Operations are now under way in the improved and larger Skelton mill of the C. G. & C. Company at Douthat for tailings retreatment where jigs were added and the tailings disposal system was changed. A. W. White of Miami, Okla., is superintendent.

»»» Rehabilitation is under way at the Paxson zinc mine near Baxter Springs, under the management of the Eagle-Picher Mining and Smelting Company. The company is serving as agent for the Metals Reserve Company to get this property into production. Two new shafts are being sunk and the old workings are being dewatered by two Pomona turbine pumps. The mill on the property was operated in 1937 and is rapidly being put into shape for operation. The ore is low grade and the premium price for zinc is the only basis for any successful operation of this zinc property.

»»» Underground workings of the Consolidated No. 7 shaft in the northwest part of the Kansas-Oklahoma zinc-lead field have been dewatered by the C. K. & E. Mining Company. Initial operations are expected to be under way during December. G. L. Childress of Joplin is in charge of operations. A Peerless Turbine pump of 8 in. size was installed to dewater the 355 ft. shaft and underground workings. Initial mining operations will be started on this level. Associated with Childress in the enterprise are Karl Koelker of Joplin and F. W. Evans of Picher.



Strip mining operations of the Clemens Coal Company near Pittsburg, Kans.

## Higher Lake Freight Rate for December Shipments

»» In order to encourage the greatest possible movement of iron ore down the Great Lakes this year, the Office of Price Administration on December 2 authorized an average increase of 25 cents per gross ton in the established lake freight rate for ore shipped during December. The normal lake transportation season closed November 30. Simultaneously, OPA allowed owners of the iron ore to pass on the exact amount of the higher freight.

The increase will compensate for higher costs, reflecting slower movement of vessels because of winter weather and greater time required in loading and unloading frozen ore.

The higher average rate of \$1.05 per gross ton, an increase of 31.25 percent above the established rate of 80 cents per gross ton for lake transportation, applies only to movement of ore from upper lake ports to lower lake ports. Upper lake ports mean all ports on Lake Superior and Lake Michigan at which iron may be loaded for shipment. Lower lake ports mean all ports on Lake Michigan, Lake Erie, Lake Huron, Lake Ontario, and their connecting waters, at which iron ore may be unloaded.

The temporary increase in freight rates is authorized in Amendment No. 73 to Supplementary Regulation No. 14. Authorization for ore owners to pass the increase along to ore buyers is contained in Amendment No. 2 to Maximum Price Regulation 113 Iron Ore Produced in Minnesota, Wisconsin, and Michigan. The amendments were effective as of December 1.

## MINNESOTA

»» The Morris Mine of the Oliver Iron Mining Co., an open pit operation on the Mesabi Range, recently started bringing ore from its pit by means of an inclined steel cord conveyor belt developed by the Goodyear Tire and Rubber Co. The ore is brought to a crushing plant at the bottom of the pit by trucks and the crushed material is conveyed up to a bin over a railroad track near the edge of the pit. The width of the belt is 30 in. and its inclined length a little more than 1,000 ft. The vertical lift from the crushing plant to the railroad ore bin is about 250 ft.

»» Iron ore shipments will reach a new record in 1942 with the total above 90,000,000 long tons by the end of the year.

»» Stripping operations are getting under way for the 1943 and 1944 mining seasons. The Inter-State Iron Co. has announced plans to strip over-

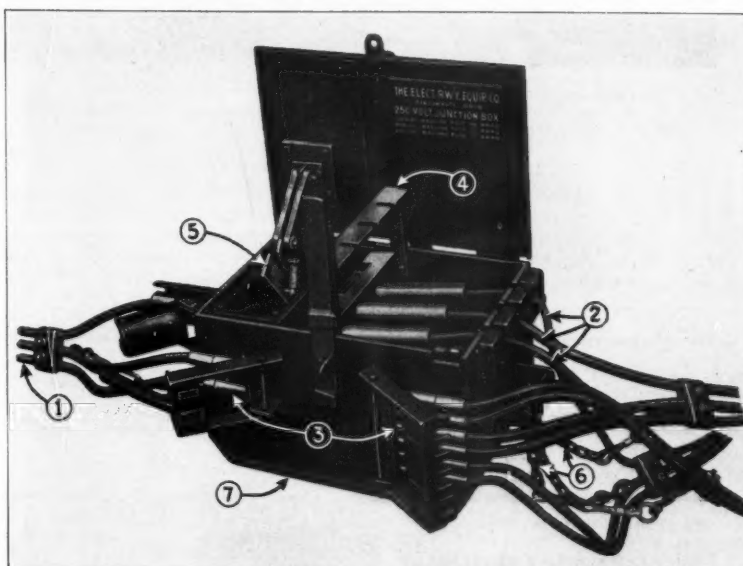
burden from the Columbia iron mine on the Mesabi Range, near Virginia, for production in 1944. The Snyder Mining Co. has started stripping operations at its Webb and Virginia properties.

## TEXAS

»» The Texas Gulf Sulphur Company received the Army-Navy "E" flag for outstanding accomplishments in the production of war materials in a ceremony on November 2, at Newgulf, Tex. More than four thousand employees of the company and their guests heard the company's

achievements lauded in speeches by Brigadier General Ray L. Avery, Commanding Officer, Edgewood Arsenal, and Commandant, Chemical Warfare School, and Rear Admiral P. W. Foote, United States Navy.

The Army-Navy "E" burgee was conferred upon employees of the Newgulf Mines and the Galveston Loading Plant of the Texas Gulf Sulphur Company, by Brigadier General Avery. H. E. Treichler, general manager, was presented the "E" flag and Rear Admiral P. W. Foote, United States Navy, presented the "E" pins which were accepted for the employees by Miss Muta Serrill.



PAT. APPLIED FOR

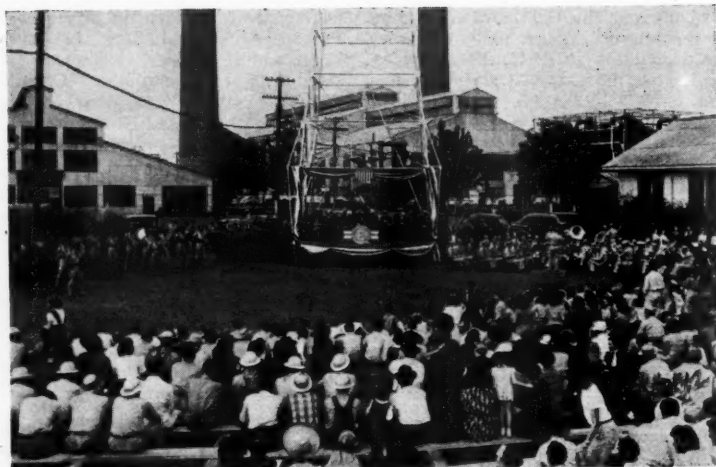
The ELRECO No. 1228 JUNCTION BOX for D.C. circuits is the essential safety link between the power source and the coal mining equipment.

### 7 Features Guarantee Safe and Efficient Service

- No. 1. 3-Wire incoming power circuit cables (Pos., Neg. & Safety Ground). Safety chain and clamp relieves all strain on cable terminals.
- No. 2. Out-going positive cables for machine, loader and drill circuits, equipped with removable socket connectors having insulated handles.
- No. 3. Pin and socket type connectors for all negative and safety ground cables; mounted on the outside of box to secure complete separation from positive circuits.
- No. 4. Safety lever which must be lowered before main switch can be closed. This lever automatically locks all terminal connections in position and prevents any circuit being opened under load.
- No. 5. Quick Break Switch operated by the opening or closing of hinged junction box lid.
- No. 6. Detachable strain chains and clamps for each individual circuit and which prevents any strain on cable connector terminals.
- No. 7. Bottom skids to facilitate moving of box to different locations.

Standard equipment includes 200, 100 and 35 ampere 250-volt enclosed fuses—solder type terminal connections eliminate necessity of all vulcanizing or splicing of cables, and 28" height of box permits use in low coal seams.

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Texas Gulf Sulphur Company and its employees were awarded the Army-Navy "E" at ceremonies held in quadrangle of the company's plant at Newgulf, Tex. A novel feature of these ceremonies was the use of a sulphur well derrick as a rostrum

Walter H. Aldridge, president of Texas Gulf Sulphur Company, indicated in his talk that sulphur has proved to be one all-important raw material available in amounts equal

to demand—one war material at least where it has been unnecessary to search either for new sources or new methods of production when a shortage of material and manpower exist.

## Western



## States

### Employment and Accidents at Copper Mines in 1941

»»» The demand for copper resulted in increased activity at copper mines in the United States during 1941. Reports from operating companies to the Bureau of Mines showed that the volume of employment (man-hours worked) increased 13 percent over 1940. The number of men working at the mines was 21,576, an increase of 2,078. The total volume of work done during the year was the equivalent of more than 55,000,000 man-hours. Expressed in man-days, the figure was 6.89 million, thus indicating an average workyear of 319 days per employee. This was a gain of 7 workdays per employee over the year 1940.

Arizona was the leading state in number of employees as well as in the number of man-hours worked.

Accidents at the mines killed 63 employees and injured 2,961. Each nonfatal injury disabled an employee for more than the remainder of the day on which the accident occurred.

The accident-frequency rate was 54.85 per million-man-hours worked;

this compares with a rate of 53.89 for 1940. These figures include a fatality rate of 1.14 in 1941, and 0.99 in 1940.

### COLORADO

»»» Permission was granted in Washington recently by the War Production Board for continued operation of the gold mines in the Cripple Creek district for a six-months period from December 8, the date of the closing order. Merrill E. Shoup, president of the Golden Cycle Corporation, and David P. Strickler, president of the Stratton Cripple Creek Mining and Development Company, went to Washington to testify before the WPB board of appeals. Official details of the permission are given on page 54.

»»» Discovery of a deposit of high-grade vanadium ore on Lightner Creek, northwest of Durango, has been reported. Many samples taken over various points on the outcrop disclose vanadium content ranging from 5 to nearly 8 percent  $V_2O_5$ . Adolphus S. Butel, F. W. Pinkerton, and L. J. Brewer, all of Durango, are interested in the property.

»»» The old Silver Hill copper mine, 40 miles northwest of Tucson, is producing 100 tons of copper ore per day, it is reported here by A. R. Byrd, Jr., who has the property under lease from the Silver Hill Consolidated Copper Co. The property has been worked little since the World War, when attempts to move ore by burro were unsuccessful. Ore is trucked to the railroad at Marana.

»»» Located principally at old and abandoned mines in isolated areas and long distances from transportation, 7,500 tons of idle scrap metal is giving Arizona mines salvage crews a knotty problem, according to W. J. Graham, assistant director of the State Department of Mineral Resources.

The scrap may not be added to the nation's drive, according to Graham, unless some Federal aid is received, since the scrap can be sold for only \$17 per ton in Los Angeles, 500 miles away from Arizona shipping centers.

A second problem is that many of the old mines are owned by out-of-state residents whose release is needed before the scrap metals can be removed from the properties. Real wealth in scrap metals are to be found, comprising rails, cars, transformers, buckets, and countless pieces of smaller equipment, if they can be reached and carried from almost inaccessible locations.

### ARIZONA

»»» Army-Navy "E" awards were made during impressive ceremonies on October 11 to six of Arizona's large copper producers.

The companies receiving the award were: The Inspiration Consolidated, Inspiration; Miami Copper, Miami; International Smelting and Refining, (Miami plant), Magma Copper, Superior; the American Smelting and Refining, (Hayden plant); and the Nevada Consolidated Corporation. Ray, mine's branch.

The ceremonies were witnessed by a throng estimated at 6,000 persons. The program was broadcast directly and later by transcription by seven Arizona radio stations.

Speakers emphasized that it was the first time that such an award had ever been made to any Arizona mining company or Arizona mine and smelter employees.

Representatives of the companies and their respective workers among the men and women who have received the "E" award, were as follows:

American Smelting and Refining Company, Hayden branch; H. O. Woods, superintendent, Ysidrio M. Flores, Byron O. Goodridge.

Inspiration Consolidated Copper Company, Inspiration; T. H. O'Brien,



general manager; R. S. Newlin, assistant general superintendent, Roy McGregor, Walter Gibson, Raymond Franco, Harvey Lawrence, Arthur Osterburg, Mrs. Eva M. Davis, Miss C. L. Hamilton.

Magma Copper Company, Superior; E. G. Dentzer, general manager; George Bell, John Brown, George Wright, Fred Crosby.

Miami Copper Company, Miami; A. S. Winther, general manager; R. W. Hughes, mine superintendent; Michael Smith, Monk Wiley, Harvey Horrell, Miss Clem Hubbard, Miss Elizabeth T. Schmidle, (Miami-Inspiration Hospital).

Nevada Consolidated Copper Corporation, Ray mines branch; R. W. Thomas, general manager; Cirilo Lopez, James E. Page.

International Smelting and Refining Company, Inspiration; P. D. I. Honeyman, superintendent; Frank Shute, Larry Baroldy.

Representatives of organized labor were as follows: Ralph Mayne, American Federation of Labor; P. E. Nail, Brotherhood of Railroad Trainmen; N. Warner, Brotherhood of Locomotive Firemen and Enginemen; F. N. Wood, International Union of Mine, Mill, and Smelter Workers, Congress of Industrial Organization.

»»» The first establishment of trailer camps in Arizona mining districts to house men released from the Army to work in copper production will comprise 700 trailers for three units, 300 for the Globe-Miami area, 200 at Clifton and Morenci, and 200 in Bisbee, according to announcement made by Edgar Bissantz, San Francisco, representative of the Federal Public Housing Authority. Trailers will be shipped into the state from Los Angeles, he said.

»»» The C.O.D. lead mine in Mohave county has been reopened by M. B. Dudley, owner of the property. The shaft was sunk 40 years ago but abandoned due to the low silver-gold content at the point reached. The vein in the "lead shaft" shows a width of approximately four feet, averaging over 30 percent lead, according to Dudley.

»»» The Mines Development, Inc., Mohave county company, has set about the task of pumping one million gallons of water from the Copperville lead-zinc mine. Electrical equipment at the property is to be installed upon the completion of dewatering and sampling.

»»» Designed to determine the effects of government orders and regulations on fluxing ore production, and its effect upon the copper output, a confidential report has been made to the WPB by the Arizona Department of Mineral Resources.



Lt. Commander William P. Mahedy pins the "E" pin on C. R. Kuzell, manager of United Verde Branch of Phelps Dodge Corp., who acted for Harry Lavender



Col. Ginsburgh awards the "E" which was accepted by Joe Best on behalf of labor

»»» Unofficial sources in the Bisbee, Ariz., area report the probable opening of a \$9,000,000 open pit copper project near Cananea, Son., Mex-

ico, contractors for the opening work said to be the W. A. Bechtel company of Los Angeles. Work is said to have been authorized by the Defense Plant corporation.

»»» Arizona miners, small and large operators alike, may air their production problems in the office of the regional advisor of the mining branch of the WPB, 1031 S. Broadway, Los Angeles, Calif., with Stuart H. Ingram, in charge. Mr. Ingram recently visited Arizona for conferences with mining officials dealing with problems which are not easily interpreted under priorities regulations.

## MONTANA

»»» Increased production of coal and a slight gain in number of man-hours of employment at coal mines in Montana during 1941, compared with 1940, were accompanied by an increase in accidents to the employees, according to reports from operating companies to the Bureau of Mines, United States Department of the Interior. The accident-frequency rate per million man-hours of employment was 81.5, whereas the corresponding rate of the previous year was 73.3 per million hours. Production of coal amounted to 3.3 million short tons, compared with an output of 2.9 million tons during 1940. Employees at the mines numbered 1,591, which was virtually the same as the number (1,586) for the preceding year. Operations at the mines averaged 192 work days per employee, a gain of 6 days per man. Four employees were killed and 175 were injured by accidents during the year.

Rosebud County was the largest producer of coal during the year and Mussellshell County employed the largest number of men. No major disaster has occurred in Montana since November 20, 1908, when nine men were killed by a mine fire in a mine at Red Lodge. This record of mining during 33 years without a major disaster is highly commendable.

## NEVADA

»»» Tungsten Associated Mines, Los Angeles, Calif., is developing a tungsten deposit in the Patterson district, Lincoln County. The property is under lease from Owen Walker, Pioche. T. H. Crawford and James Pollard head the lessee company, which plans to build a mill while current shipments go to the Salt Lake City stockpile of the Metal Reserve Co. Pat English, of Pioche, is in charge of operations.

»»» The Consolidated Coppermines Corp., Kimberly, had collected and shipped 952,000 lb. of scrap iron

and steel and 9,000 lb. of copper scrap up to September 1.

»»» Griff Mines, Inc., owned jointly by E. C. Griffiths and Gus Rogers, is reported to have developed a large tonnage of zinc ore at the Old Superior mine, located a few miles south of Scossa. A recent carload shipment ran 38 percent zinc.

»»» At the War Conference of the American Mining Congress held recently in Salt Lake City, W. E. Greenough commented upon the latest developments of a tin deposit in Nevada, operated by J. O. Greenan and G. W. Kerr. "Recently I visited a very interesting tin deposit in Pershing County, Nevada. It looks like we might have a tin producer in the United States after all. This property is known as the Greenan and Kerr property, out in the Majuba Hill area. It was only taken over on the 17th of October, and on the 3rd of November shipped three tons of tin ore, which by careful sorting at the mine will run about 30 percent tin, and that is pretty good. Since then they have accumulated 70 or 80 tons which will run probably around 10 to 20 percent. They have developed a stope in the last two or three weeks which will make quite a tonnage, which I think will run about 2 percent tin."

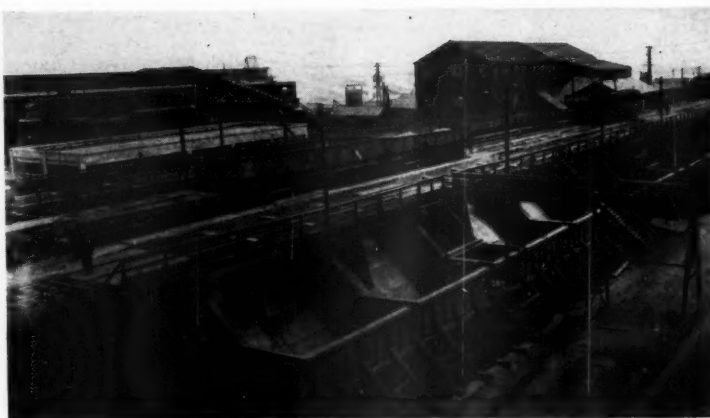
## UTAH

»»» After breaking in its new mill at Monticello, Utah, the Vanadium Corp. is steadily increasing output of vanadium ore from its property. About 150 men are employed mining and trucking the ore to the plant.

»»» A \$15,000 RFC loan has been granted Kearsage, Inc., of Salt Lake City, for the development of its zinc-lead-copper property in the Ophir district of Tooele County. The Kearsage mine is developed by a 1,500 ft. incline shaft and about 5,000 ft. of underground workings. Alonzo Mackay, of Salt Lake City, heads the company.

»»» Mining operations have started at the manganese property of Mines, Inc., in Dry Canyon, southwest of Marysville. A. Ezra Gull, of Salt Lake City, is president of the company.

»»» New flotation equipment has been installed to increase production of copper and tungsten at the property of the Prosper Mining Co. near Milford, Utah. The mill is under lease to the C. H. Segerstrom interests of Sonora, Calif. Edward Schoo, of Milford, is president of the Prosper Mining Co.



View of receiving bins showing sample mill in the right background at Garfield smelter, Utah

»»» A Class C loan of \$5,000 has been granted by RFC to George H. Short, of the Lakeside Monarch Mining Co., Salt Lake City, for additional development of the Trout Creek mine in Juab County, Utah. One shipment of zinc ore has been made to the Combined Metals Reduction Co.'s mill in Bauer. Recent investigation with an ultraviolet lamp has disclosed scheelite also present in the ore.

## NEW MEXICO

»»» Increased production, more man-hours of employment, and a reduction in accident frequency were revealed for the coal mining industry in New Mexico in 1941, compared with 1940, by reports from operating companies to the Bureau of Mines, United States Department of the Interior. Not only the accident rate but also the actual number of accidents was reduced in 1941, in spite of the increase in the number of man-hours of exposure of the employees to mining hazards.

Operators' reports for 1941 showed that the mines employed 1,861 men for an average of 216 work days per man. The total working time for all employees was nearly 2.9 million man-hours, an increase of 21 percent over 1940. Production of coal was 1.2 million tons, compared with 1.1 million tons during the previous year. The accident-frequency rate for the year was 78 per million man-hours of exposure, compared with the previous year's rate of 125 million man-hours.

Salient features of the industry's operations during 1941, with respect to safety from accidents to the workers, are given in the accompanying tables.

Colfax County produced the most tonnage, closely followed by McKinley County. However, McKinley County

employed the largest number of men and had the greatest number of accidents. The accident rate for Colfax County compared very favorably with that of the state as a whole. No major disasters have occurred in the coal mines of New Mexico since December 7, 1932, when an explosion in a mine at Madrid caused the death of 14 men.

## Wheels Wheels of Government

(Continued from page 54)

Eberstadt Program Vice Chairman, and Ernest Kanzler Director General for Operations. Under Eberstadt will be a Program Bureau of which Donald D. Davis is director, and a Facilities Bureau with Fred Searls as director. Under Director General for Operations Ernest Kanzler will be Deputy Director General for Staff H. W. Dodge, who attended the recent AMC conference at Salt Lake City on November 16 and 17; Deputy Director General for Industry Divisions John R. Kimberly and Deputy Director General for Field Operations Wade Childress. The Steel, Copper and Aluminum-Magnesium Divisions (the three Controlled Materials Divisions) are placed directly under the Director General. Under the newly created Minerals Bureau, with Joseph M. Scribner as director, are grouped the Mining Equipment Division, and the Mica-Graphite, Tin-Lead, Zinc, and Miscellaneous Minerals Divisions.

Effective December 2 Arthur S. Knoizen became director of the Mining Equipment Division, succeeding Dr. Wilbur A. Nelson who, under the Director General for Operations, will engage in the problems of increasing the production of the strategic and critical minerals.

## CALIFORNIA

»»» A five stamp mill and other equipment is being installed for the concentration of chrome ore being developed and mined from a property northwest of Grass Valley, operated by Luke Williams. Electric power will be generated by a water wheel.

»»» Owl Rock Products Co. recently filed articles of incorporation with headquarters in Los Angeles. Directors of the company are D. H. Burden, 420 South Alameda, Compton; H. R. Burden, 611 North Willow, Compton; and H. L. Wells, 226 Monroe Place, Monrovia. Legal representative is Ivan G. McDaniel, 642 Title Insurance Building, Los Angeles.

»»» Riverside Tungsten Co., of Riverside County, has been formed with the following directors: W. T. M. Cook, Santa Anna; Benton N. Colver, Glendale; Clyde A. Pierson, San Bernardino; and J. L. Richardson, of Riverside. Legal representative is Jerome Lyman Richardson, Metropolitan Building, Riverside.

»»» The Evening Star mine, near Cima, recently shipped 25 tons of cassiterite to the Texas City tin smelter, Texas.

»»» As a part of the investigation of domestic deposits of strategic minerals by the Geological Survey, the Fairview and Ladd chromite deposits have been examined and mapped by G. A. Rynearson of the Survey. The Fairview mine is 49 miles by paved and graded dirt roads from the stock pile of the Metals Reserve Co. at Yreka. The Ladd mine is 57 miles by similar roads from Yreka. Each of these mines produced chromite during the first World War, and 50 tons of ore was recently shipped from the Fairview mine. The chromite occurs in a large sill-like mass of peridotite intruded into chlorite schists and gneissic diorite.

The Fairview ground comprises four claims, owned by F. S. Pollak of Washington, D. C. An adjacent claim is owned by Hollis Anderson of Scott Bar, Calif. Development consists of 13 open cuts in ore.

The Ladd mine, also known as the Dolbear or Klamath chrome mine, is owned by John Ladd of Seiad Valley, Calif., and is leased to Mrs. D. R. Moroney of Hamburg, Calif. It is developed by 16 open cuts and four short adits. Four disconnected ore bodies are exposed in the workings, and an-



The Sunshine Mine in Idaho is a substantial producer of antimony

other has been prospected by two small cuts about 500 ft. southwest of the glory hole.

## IDAHO

»»» Bunker Hill and Sullivan Mining and Concentrating Co., is constructing with its own funds a slag fuming plant, estimated to cost \$1,000,000. Construction has been delayed slightly but the plant is expected to be in operation during the first quarter of 1943. When operating at capacity, the plant will produce between 35 to 50 tons of zinc per day from blast furnace slags. P. C. Feddersen, Kellogg, Idaho, is smelter general superintendent.

»»» Hecla Mining company has been producing at capacity since the war started and at the risk of dangerously depleting its mine ore reserves. The company is operating its Gem milling plant on a seven day week basis and has leased the Silver Cable mine, east of Mullan, thus bringing into production an entirely new source of zinc-lead ore. This ore is being handled by truck over a 15-mile haul to the company's Gem mill.

»»» One of the highly productive mineral areas of the Coeur d'Alene district has no individuality of its own but is owned and operated jointly but separately by the Sunshine and Polaris Mining companies who refer to it as the "Intervening Area." To the miners who work there it is known as "No Man's Land." The area consists of a V-shaped fractional claim of about 23 acres lying in be-

tween the Sunshine and Polaris mines. It is operated by both companies to avoid expensive apex and extralateral rights litigation. Sunshine mines the ore below the 1700 level and returns 40 percent of the proceeds to Polaris, while the Polaris mines from the 1700 level up and returns 40 percent to Sunshine.

»»» The Sidney Mining company, whose property in the Pine creek district has been closed since 1937, has recently reopened the mine under the management of William A. Beaudry, formerly manager of the Stewart mine in the same area for F. Aug. Heinze.

»»» The Butte-Highlands Mining company, former operators of a gold and copper property at Butte, Mont., and the Aurora Mining company of this district have agreed to pool their resources in the development of the Aurora lead-silver property on a branch of Beaver creek north of Wallace.

»»» The Linfor copper property on the Little North Fork of the Coeur d'Alene river, about 10 miles up the river from Enaville, has been sold under lease and bond to George Austin, who recently sold a controlling interest in the Rainbow company to the Coeur d'Alene Mines corporation. The Linfor property, according to old smelter returns, shipped during 1916-17 copper ore valued at \$100,335. The property was developed by shaft to a depth of 350 feet and a 100-ton milling plant was constructed. Austin proposes to reopen the old workings and if enough ore can be developed he will erect a new mill.



# Manufacturers Forum

## A "Rubber Lung" for Artificial Respiration



Lives of industrial workers may be saved by unskilled helpers through use of the rubber lung, a revolutionary device for administering artificial respiration, introduced by E. D. Bulard Company, of San Francisco, Calif., manufacturers of industrial safety equipment. The rubber lung is recommended to supplement and increase the effectiveness of Schaefer prone pressure treatment to restore breathing suspended through shock, fumes and gases, drowning, etc.

The device is strapped to the back or stomach of the victim and adheres to the body through suction. Raising and lowering the lung handle at normal breathing rate activates the muscles of the victim, causing them to

draw in and exhale air. Differing from mechanical resuscitators, the rubber lung does not force air in and out of the lungs, but stimulates action of the normal body muscles, helping them to do the work required for breathing until they regain strength to do this work without assistance.

Because of the gentle, natural breathing stimulus, the rubber lung may be used safely by even a totally inexperienced person. The only point to watch is timing, to assure a rhythm as close to normal breathing as possible. In any hands, under any condition, there is no danger of doing harm to the patient. The device is said to be entirely foolproof.

## New A-C All-Position Welding Electrode

A new electrode designed specifically for all-position welding of mild steel with A-C type welding machines has been developed by Air Reduction Sales Co. in the following diameters:  $\frac{1}{8}$  and  $\frac{5}{32}$  in. Made to fill a rapidly growing need for a high-quality A-C electrode for all-position use, the Airco No. 230 electrode complies with all requirements of the American Welding Society Classification E6011, American Bureau of Shipping, Group H1G and B1G for A-C and other specifications qualifying it for use on war work.

Physical tests demonstrate that this electrode gives exceptionally satisfac-

tory results. The high quality of deposited metal of the No. 230 is fully comparable to that of the best D-C reverse polarity all-position electrodes.

Following are physical test results made on all-weld-metal tensile specimens:

	As welded	Stress relieved
Ultimate tensile strength .....	70,000-75,000	65,000-70,000
Percent elongation in 2 in. ....	25-30 percent	30-35 percent

An outstanding characteristic of this A-C electrode is said to be that average operators have no difficulty in securing good fusion and complete penetration. The finished weld deposit is quite smooth and has a uniform surface contour.

## Copper for Distribution Cutouts Conserved

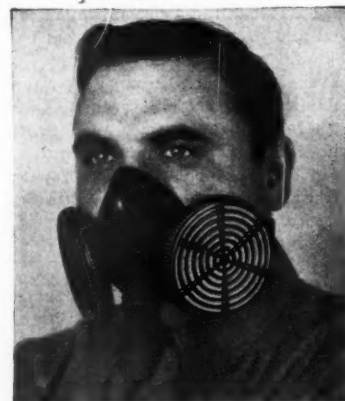
Acting upon a request from WPB to save critical materials, the National Electrical Manufacturers Association (NEMA) has changed the NEMA Standard for Distribution Cutouts to reduce the over-all length of universal fuse links (0 to 15 kv.) for distribution cutouts from 23 to 20 in. (minimum). This change in the standard was approved September 9, 1942, and became effective immediately thereafter for the duration of the emergency. It applies to links manufactured after that date.

Links manufactured prior to that date to the former standard of 23 in. and which are now in stock will not be affected. Since practically all applications of these 23-in. links, as well as many of the new 20-in. ones, will permit cutting off surplus copper ends when they are installed in distribution cutouts in service, every effort should be made by users to accumulate these ends for salvage. This, together with the reduction in length of new links, should effect savings of several tons of copper annually.

## Improved Respirator

In order to save metal for war production, the M. S. A. Comfo Dust Respirator has been re-designed with filter cases of black plastic, according to a recent announcement by the Mine Safety Appliances Company, Pittsburgh, Pa.

U. S. Bureau of Mines approved, this respirator now offers better ap-

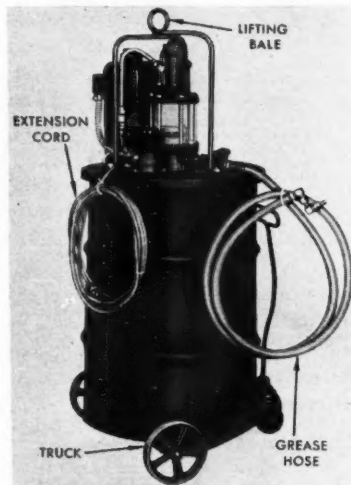


pearance plus less resistance to air flow, according to the manufacturer. The new filter container units are thinner, with rounded edges, permitting even better sidewise and downward vision. The re-designed plastic filter cases have high impact strength with no electrical conductivity. They are not affected by perspiration.

Retaining every Comfo advantage of safety and comfort in dust protection, the field-proved plastic model has twin side-placed replaceable filters of unusually large area. The unit is easy to clean and maintain, and is available in types to meet various dust and mist conditions.

### Electric-Hydraulic Barrel Pump

Trabon Engineering Corp., Cleveland, Ohio, manufacturer of industrial lubricating equipment, has just introduced its new Series H electric-hydraulic barrel pumps. These pumps



are operated simply by plugging the extension cord into an electric outlet, thus permitting their use around a plant any time and at any place an electric line is available. Due to this electric operation, these pumps are not only well adapted for service alongside a production line filling the bearings of various manufactured articles prior to their being shipped, but also are especially well suited for use by installation crews, setting up machinery in new plants, and by maintenance men working Sundays, holidays, etc., when compressed air, needed for operation of air-driven pumps, usually is not available.

The pump, complete with motor, hydraulic cylinder, etc., is mounted rigidly on a flanged head. The flange fits snugly over a standard 55-gal. 400-lb. drum permitting oil or light, medium, or heavy grease to be pumped from the original shipping container without rehandling; and a lifting bail is provided permitting the unit to be transferred easily from one drum to another, with a hand hoist or lifting bar.

### New Precision Balances

Two new models of Roller-Smith precision balances have been developed to meet the need for an ac-

curately weighing instrument that can be used by unskilled or semi-skilled workers. These balances, which are available in various sizes for weights ranging from less than 3 mg. to more than 50 grams, are modified designs of the Roller-Smith Model B balance, which has been used in industrial plants and laboratories for a number of years.

In these new designs the Model B-1 is available in double-hook type only while the Model MB can be furnished in single hook or double hook types. The only other difference between the two is that the MB balance is provided with a weighing chamber to protect the hook and weighing sample from drafts. Both have a guaranteed accuracy of  $\frac{1}{10}$  of 1 percent.

### New Synchromatic Relay

A new STA synchromatic relay for field application that makes possible more satisfactory synchronous motor starting is announced by the Westinghouse Electric & Manufacturing Co. The relay consists of two elements, one that is speed responsive and the other time responsive. The speed-responsive element is a current relay and the time-responsive element is a rotary-drum switch. Both elements are simple in design, rugged and trouble-free in construction and need no critical adjustments.

The synchromatic relay meets all six basic requirements for synchronous motor control; (1) maximum nonsynchronous speed attained before field application, (2) minimum power required because synchronizing is never attempted before maximum speed is attained, (3) synchronizes in minimum time consistent with maximum speed, (4) positive synchronizing sequence, (5) minimum line disturbance because of favorable rotor position, and (6) automatic pull-out protection. The synchromatic relay is compactly designed either for panel mounting or modern dead front, metal enclosed, swing-door type control structure.

### CATALOGS AND BULLETINS

**CONSERVING COPPER.** *General Electric Co.*, Schenectady, N. Y. GED-1011 shows how savings in copper can be realized by following certain tested fundamental steps in making the proper electrical layouts. 16 pp.

**COUPLINGS.** *Phillips Mine and Mill Supply Co.*, Pittsburgh, Pa. Mine and industrial car couplings, pins and coupling links are illustrated and described in this new bulletin issued by the company. Five types of coupling pins and five types of links are shown. 4 pp.

**CRUSHERS.** *Allis-Chalmers Mfg. Co.*, Milwaukee, Wis. Bulletin B6177-A is a comprehensive and well illustrated catalog-review of the manufacturers line of processing equipment such as crushers, grinders, rolls, hammer mills, ball and

pebble mills, screening and material handling equipment. Data on rotary kilns are also included.

**DRYERS.** *Hardinge Co.*, York, Pa. Bulletin No. 16-C is a comprehensive and well illustrated brochure, describing features of the manufacturers various classes of Ruggles-Coles dryers for various raw material products. 36 pp.

**McNally-Pittsburg Mfg. Corp.**, 307 N. Michigan Ave., Chicago, Ill. Bulletin No. 242 describes and illustrates features of the manufacturers McNally-Vissac heat dryers for granular material such as coal, etc. 8 pp.

**ELECTRIC-HYDRAULIC BARREL PUMPS.** *Trabon Engineering Corp.*, Cleveland, Ohio. The company offers Bulletin No. 425, describing and illustrating features of its electric-hydraulic barrel pumps. 4 pp.

**EQUIPMENT FOR MINES AND PROSPECTORS.** *Ingersoll-Rand Co.*, Phillipsburg, N. J. The company offers Form 2724, a handy pocketbook size booklet containing 72 illustrations and numerous data on rock drills, detachable bits, reconditioning equipment, hose lines, hoists, pumps, and air compressors. The language is entirely non-technical, and the reader will find many hints that may help save time and labor. 42 pp.

**EXCAVATING EQUIPMENT.** *Trackson Co.*, Milwaukee, Wis. "Speed Production Now" is the title of a new bulletin No. A 294, offered by the company, showing how industries are speeding the digging and handling of materials with the manufacturers equipment. 8 pp.

**HOW TO REPAIR VALVES.** *Crane Co.*, 836 S. Michigan Avenue, Chicago, Ill. The company offers a booklet explaining and illustrating the various steps to take in repairing leaky gate and globe valves, as well as hints on how to reclaim discarded valves. 6 pp.

**MAINTAINING THE QUALITY OF LUBRICANTS IN SERVICE.** This is the title of a very comprehensive engineering Bulletin NQ-52, describing how to conserve the lubricants you already now are using. It is offered by the Sales Technical Service Department of the *Standard Oil Co. of Chicago*. 40 pp.

Bulletin PT-111 entitled "Power Transmission Equipment and its Lubrication" is another instructive book offered by the same company. 52 pp.

**MOTORS.** *Allis-Chalmers Mfg. Co.*, Milwaukee, Wis. Bulletin B6052-C is designed to give all the facts necessary for quickly choosing correct motors for wartime applications. 12 pp.

*General Electric Co.*, Schenectady, N. Y. GEA-3922 is a leaflet describing the manufacturers new totally enclosed induction motor for use in magnesium dust, aluminum dust and other combustible metal dusts. 1 p.

Bulletin GED-1017 is called "A New Motor Fitness Manual." The bulletin discusses how to get the most service out of old and new motors, "switching" motors from one job to another, and equipping old machines with new motors. A supplement explains how to save critical motor materials, including WPB recommendations and information on the use of lost-time-temperature charts. 40 pp.

**RUBBER GUIDE BOOK.** *The B. F. Goodrich Co.*, Akron, Ohio. Bulletin 2-8981-GA contains information on the manufacturers products and processes using rubber, amiripol, koroseal and reclaimed rubber. 30 pp.

**SCREENS.** *Universal Vibrating Screen Co.*, Racine, Wis. Catalog No. 107. The company offers a 6 x 9 in. booklet well illustrated, describing its complete line of vibrating equipment for coal and other mineral products. 32 pp.

## SIMPLICITY GYRATING SCREENS

Use the correct basic principle of Positive Eccentric Action, produced by a solid shaft with the counter-balance machined directly thereon, placing the balance directly under the load.

Other Simplicity features are the special rubber corner supports, screen cloth in tension four ways over a doubly crowned screen deck, and sturdy all steel construction with each machine finished in every detail.

Simplicity Gyrating Screens are available in sizes from a 2' x 3' up to a 5' x 12' in single shaft assemblies; built in one, two, three, and four decks; as standard inclined types and also as low head types, where desired.

*Descriptive Bulletin Available*

**SIMPLICITY ENGINEERING CO.**  
DURAND, MICHIGAN

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## ROBINSON VENTILATING COMPANY

**Fans and Blowers**  
**Ventilating Engineering Service**

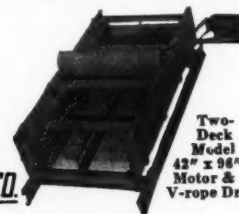
ZELIENOPLE  
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## UNIVERSAL SCREENS and UNIVIBE RIDDLES

Vibrating Screens and Vibratory Riddles, in many sizes and types, all priced most reasonably. . . . Tried, Proved and Guaranteed Products. Leaders in Screening Field Since 1919.

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Established 1902

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**DIAMOND CORE DRILLING**

PUNXSUTAWNEY, PA.

Our specialty—Testing bituminous coal lands  
Satisfactory cores guaranteed

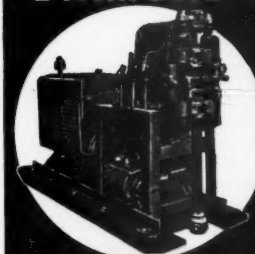


**CORE DRILLING**  
ANYWHERE

We look into the earth

**PENNSYLVANIA**  
**DRILLING COMPANY**  
PITTSBURGH, PA.

## DIAMOND CORE DRILLING CONTRACTORS



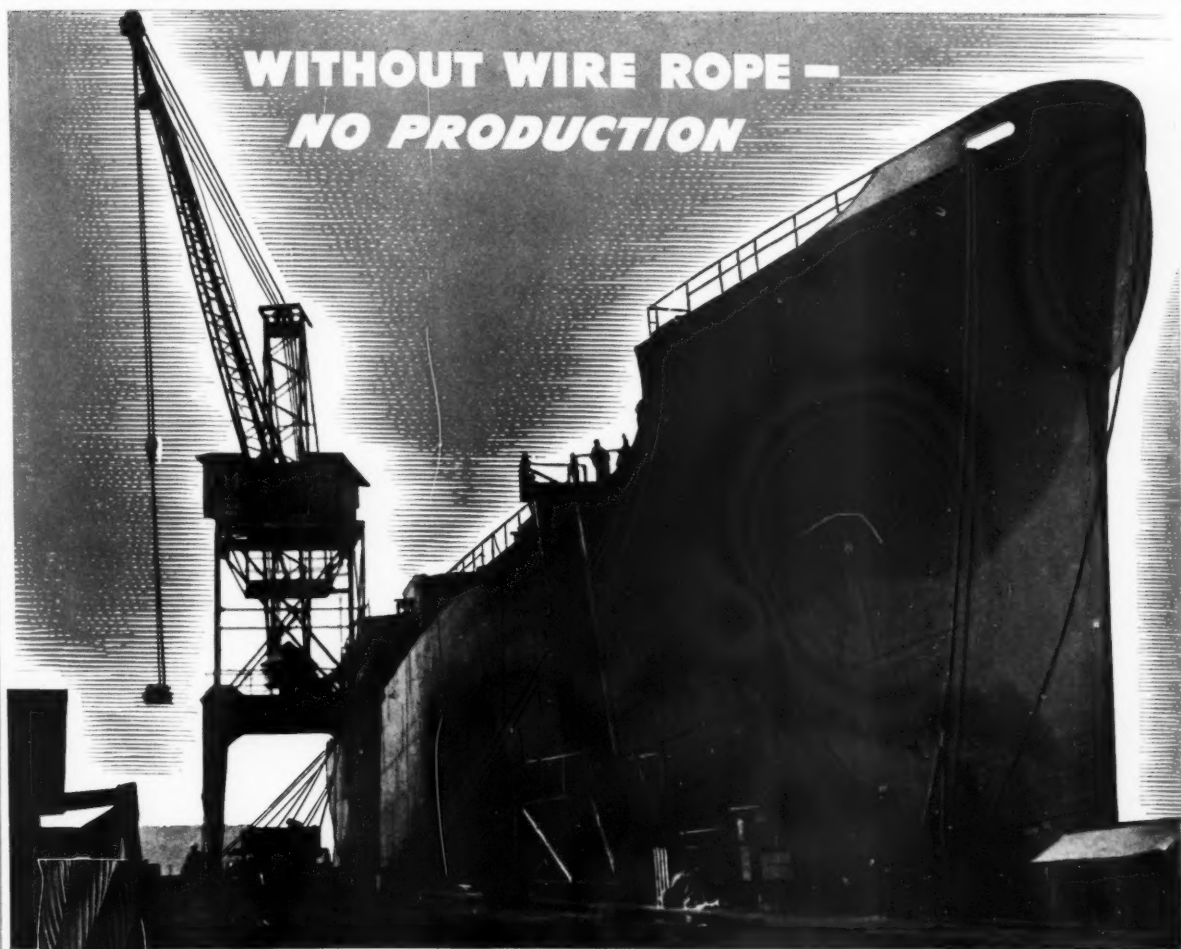
1200 FT. CAP. 2 1/4" DIAMETER CORE

**MOTT CORE DRILLING CO.**  
HUNTINGTON, W. VA.

TESTING COAL AND ALL MINERAL PROPERTIES—USING OUR LIGHT GASOLINE DRILLS.. THEY SAVE FUEL AND MOVING COSTS.. WE GUARANTEE SATISFACTORY AND PROPER CORES..

PRE-PRESSURE GROUTING FOR MINE SHAFTS... GROUND SOLIDIFICATION FOR WET MINE AREAS BY OUR STOP GROUT METHOD. WATER WELLS AND DISCHARGE HOLES DRILLED AND GROUTED... ELECTRIC DRILLS FOR INSIDE MINE DRILLING..





**WITHOUT WIRE ROPE —  
NO PRODUCTION**

**WITH TRU-LAY *Preformed* WIRE ROPE—  
MORE PRODUCTION**

Your machines will operate with fewer interruptions for wire rope replacement if they are equipped with American Cable TRU-LAY PREFORMED. That means steadier production; time and money saved; steel conserved. . . . Regardless of application, American Cable TRU-LAY PREFORMED WIRE ROPE invariably lasts longer than ordinary non-preformed rope. It gives you greater dollar value in increased service alone. But TRU-LAY does much more than this. It handles much easier, faster, *safer*. It is a flexible, tractable, willing-to-work rope—not the kinky, unruly kind that fights the men who are working with it. It spools on the drum better; runs true and straight over sheaves; requires no seizing when cut. . . . Aid production—conserve steel—save money by using American Cable TRU-LAY PREFORMED WIRE ROPE.

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Wilkes-Barre, Pa., Atlanta, Chicago, Denver, Detroit, Houston, Los Angeles,  
New York, Philadelphia, Pittsburgh, San Francisco, Tacoma

**AMERICAN CHAIN & CABLE COMPANY, Inc.**

BRIDGEPORT • CONNECTICUT

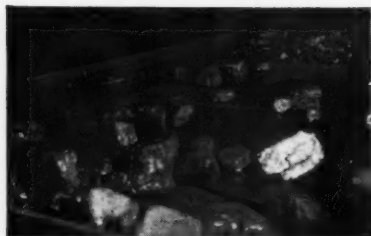


**ESSENTIAL PRODUCTS . . .** AMERICAN CABLE Wire Rope, TRU-STOP Emergency Brakes, TRU-LAY Control Cables, AMERICAN Chain, WEED Tire Chains, ACCO Malleable Iron Castings, CAMPBELL Cutting Machines, FORD Hoists and Trolleys, HAZARD Wire Rope, Yacht Rigging, Aircraft Control Cables, MANLEY Auto Service Equipment, OWEN Springs, PAGE Fence, Shaped Wire, Welding Wire, READING-PRATT & CADY Valves, READING Electric Steel Castings, WRIGHT Hoists, Cranes, Presses . . . *In Business for Your Safety*

# POINTERS ON THE OPERATION AND MAINTENANCE OF YOUR

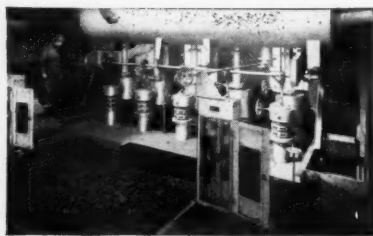
*America needs Scrap*  
**Throw Your  
Scrap into  
the FIGHT!**

**T**HE suggestions that follow are based on long experience and are given out, in the knowledge that they can be of definite value, both in your equipment conservation and greater production efforts. To save equipment from overloads and shocks that cause breakdowns, it is advisable to operate as continuously and uniformly as possible throughout shifts and not in intermittent spurts, at speeds much higher than rated capacities. Frequent and thorough inspection and lubrication will detect potential failures and with prompt attention to small repairs, major replacements will be averted.



## SHAKING SCREENS

Tight connections with minimum "play" in reciprocating parts are essential to long life. Frequent inspection, ample lubrication required. Keep all bolts tight. Proper adjustment of bushings in connecting rods may prevent a serious breakdown. Spare drive shaft, eccentrics, and connecting rods are good insurance against delays if these vital parts fail.



## WASHING UNITS

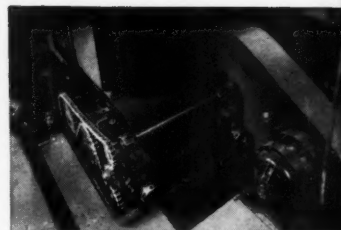
Inspect frequently. Remove accumulation of "tramp" iron that might damage refuse elevators and replace worn buckets and chain parts promptly.

Obviously, delivery of repair parts is much slower than in normal times due to material shortages. Our stocks are therefore much smaller, and we suggest that you check your equipment now and place orders for parts likely to require early replacement as far in advance as possible.



## SIZER-CRUSHERS

Worn and misaligned rolls not only produce excessive oversize but put heavy strain on the entire machine. New rolls or new segments will give a more uniformly-sized product and also protect machine against possible damage.



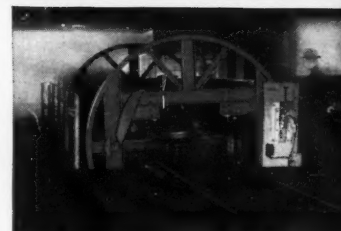
## CAR FEEDERS AND HAULS

Wear, in chain links and pins increases chain pitch and may lead to broken sprockets. Loose bearing bolts may lead to broken gears. Worn brakes (on car hauls) may allow trip to get out of control and wreck cars and equipment.



## ROTARY CAR DUMPERS

Cleanup regularly and frequently. An accumulation of dirt on rings and rollers will cause excessive wear in these moving parts, as well as bearings. Worn brakes and cars badly out of shape may wreck the dumper.



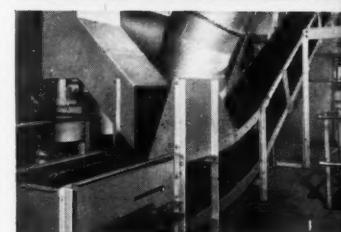
## BELT CONVEYORS

Belts under improper tension or not tracking correctly will wear rapidly. Idlers should be accurately lined up and the right amount of counterweight provided for maximum life and efficiency of belts, idlers and driving equipment.



## FLIGHT CONVEYORS

Bent flights may pull chains out of line and off sprockets, wrecking conveyor. It's easier to replace a few pins, bushings, links, or flights than to rebuild a wrecked machine. Proper tension in chains (not too loose or too tight) prevents many breakdowns.



## ELEVATORS

Check wear on chains (see car hauls). Bent buckets may pull chains out of line and off sprockets, wrecking elevator. As with conveyors, it's easier to replace a few pins, bushings, links, or buckets than to rebuild a wrecked machine.

